

R. F. O. Kemp.

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BRITISH FLORA

GASTON BONNIER

MEMBRE DE L'INSTITUT,
PROFESSEUR DE BOTANIQUE À LA FACULTÉ
DES SCIENCES DE PARIS,
CHEVALIER DE LA LÉGION D'HONNEUR

AUTHOR OF
"NAME THIS FLOWER"
ETC., ETC.

BRITISH FLORA

By GASTON BONNIER

TRANSLATED & ADAPTED
FROM THE FRENCH BY
ETHEL MELLOR
DOCTEUR ÈS SCIENCES, ETC.



WITH 2300 TEXT FIGURES

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PREFACE

The name of Gaston Bonnier is one of the most widely known and honoured in France and wherever the French language is read and spoken.* Gaston Bonnier successfully devoted many years of his life to bringing the Natural Sciences within the realm of school studies and home life; his books and articles were always welcomed, and will remain appreciated, for they reflect the intense love of their author for the Natural Sciences as well as his sympathy for and understanding of the human mind and its needs.

Gaston Bonnier came to the fore in the botanical world some forty years ago when he proved experimentally the synthesis of lichens and consequently became a participant in the Schwendener-Nylander controversy. About the same time, he was elected a professor of botany in the Faculty of Science at the University of Paris; throughout his life he remained the inspiring leader of an ever earnest group of students. The international character of science was typified in Gaston Bonnier's research laboratories at the Sorbonne and in the Forest of Fontainebleau where students of many nations met and worked side by side under a master ever ready to help, advise and guide.

British Flora is a translation and adaptation of Gaston Bonnier's *La Flore du Nord de la France et de la Belgique* now in its sixteenth edition in those countries.

The aim of the *Flora* is to bring the determination of plants within the powers of all. Many people who have no botanical knowledge are interested in the names of plants, and many of the characteristics of plants in the keys of the various Floras are minute and difficult even for the student of botany to determine; Gaston Bonnier therefore chose for the keys of his *Flora* only those plant characteristics which can be seen by the ordinary observer. He arranged the keys in the form of synoptical tables

so that the reader might appreciate at a glance the differences between plants, and as a further aid he intercalated many figures in the text. Gaston Bonnier illustrated his texts freely and would quote from the philosopher Bersot's *Lettre sur la Botanique*: "If the features of a person are described in detail, he is not recognised; the face is seen, the person is recognised always. The minute description of a plant is not sufficient for its determination; when the plant is seen, the observer experiences a security which is not given by the description."

It was the intention of Gaston Bonnier to follow closely the preparation of the present work, but on the eve of his collaboration he passed away.

The translation and adaptation of *La Flore du Nord de la France et de la Belgique* has entailed a thorough revision. The natural order *Asclepiadaceæ* and some species not found in this country have been removed; the natural orders *Frankeniaceæ*, *Tamaricaceæ*, *Polemoniaceæ*, *Eriocaulaceæ* and *Salviniaceæ* have been included. The increase in the number of species by about seventy is chiefly due to the more extensive and varied littoral of the British Isles, and to the greater range in altitude and latitude than in the north of France and Belgium. Quite a number of plants found only in cultivation in this country have been retained in the Flora, but in each case the species is indicated as being cultivated or planted; their retention is contrary to botanical usage but has a common-sense basis. Such plants as the Sun-flower and Sweet Chestnut are just as likely to attract the attention of the ordinary observer as are the indigenous plants, consequently there appears no reason why the figures and descriptions of cultivated species should be removed from this Flora; the indication given below the name of the species should be sufficient demarcation. The Flora as here given comprises about 1750 plants, including varieties, of which comprehensive indexes are given at the end of the book.

The material changes in the text are few and have in no case been made without due consideration being given to what I judged, from my personal knowledge of Gaston Bonnier, would have been his wishes. Before making the changes I consulted his widow and daughter, Madame Bonnier and Madame Combes,

also Monsieur R. Douin, Docteur ès Sciences, who is continuing the compilation of the important *Flore de la France* on which Gaston Bonnier had been working for some years.

The translation of *La Flore du Nord de la France* was begun by the late G. S. Boulger, and some of his work is embodied in the first and last sections outside the main text.

For the adaptation of the whole Flora and the translation of the main text, glossary, and indexes I am entirely responsible. The description of the distribution of plants in the British Isles and the accompanying map have been specially prepared by me for the present book.

E. MELLOR.

UNIVERSITY COLLEGE, READING.

January, 1924.

EXTRACTS FROM THE PREFACE

TO

LA FLORE DU NORD DE LA FRANCE ET DE LA BELGIQUE.

When we have made a beginning in the study of botany by simply proposing to ourselves to find out the name of a plant, we find ourselves faced with numerous difficulties. What little knowledge we may have previously been able to acquire by reading elementary books on botany, will be almost useless for the purpose we have in hand. The authors of Floras in most cases write in a language of their own, so bristling with technical terms that we require to turn every minute to a glossary for their meaning. Their descriptions bear on all sides the inherited traditions of scientific Latin and old-world medical expressions. A new language has thus to be learned and it is not even the same in each work. This is the chief obstacle that faces all who wish to take up botany.

It must also be frankly admitted that the longest and most detailed descriptions are insufficient to impart a precise notion of the distinctive characters of a species. For this purpose, nothing can replace drawings from nature. Figures representing the characters of all species have, however, never been published except in very costly illustrated works.

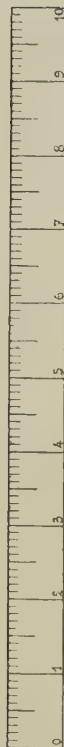
Recognising these numerous difficulties which we have ourselves had to meet in using Floras, we have endeavoured to present here a new, clearer and simpler method.

The characteristics of plants are so described as to avoid as far as possible all technical terms; while, thanks to the very numerous figures inserted throughout, the text is not too lengthy. This allows of the grouping of the plants in synoptical tables so that their resemblances and differences can be appreciated at a single glance. We hope that in this manner we have

secured the advantages of the dichotomous keys commonly used in Floras while avoiding those drawbacks which are familiar to all who have employed such keys.


This book is not a compilation from keys already in existence. All the descriptions, all the figures and the arrangement of the tables are the result of the study of the plants themselves, as we have been able to obtain numerous specimens from standard collections.

We owe the faithful delineation of the specific characters of the plants, drawn from nature, to Madame Bergeron-Hérincq who has been good enough to lend the assistance of her talent for the illustration of this Flora.



10 centimetres or 100 millimetres.
(4 inches approximately)

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INTRODUCTION

The reader who has not made any previous study of botany will do well to begin by reading the INTRODUCTION TO THE STUDY OF PLANTS, pp. 235-41. If he then meets with a word the precise meaning of which in botany is not known to him, he should consult the glossary, pp. 242-60, where these words are arranged alphabetically and accompanied by examples and explanatory figures.

In this introduction we shall show how the illustrated synoptical tables in this book are to be used, and give some advice to beginners as to the collecting and preservation of specimens.

I. HOW TO USE THE ILLUSTRATED SYNOPTICAL TABLES.

In the first instance specimens should be chosen with large flowers and with all their parts conspicuous. After the names of such plants have been determined, it will be possible to pass on gradually to others with smaller flowers or to those which may be otherwise more difficult to examine.

We can begin with some plant well known to everybody and decide to find out its name by means of the keys. Suppose, for example, that we have a flowering branch of the common Strawberry.¹

We open the book at page XIX where we find the GENERAL KEY with which the beginner should always start in his analysis. To the left of the first bracket we there read: *Plant with flowers*, and below, in a corresponding position: *Plant without flowers*. That is to say, we have to choose between the two alternatives or questions:

- { *Plant with flowers?*
- { *Plant without flowers?*

We have to find out which of these two alternatives agrees with the plant that we are analysing. Our plant has flowers; it is therefore the first alternative that agrees. The second would be applicable to a Fern, for example. We therefore ignore the second alternative and take the first, which brings us to a bracket where we find ourselves faced by two new questions. They are:—

- { *Flowers not collected in a head?*
- { *Flowers collected in a head?*

1. The beginner may not understand such simple words as "stamens" and "pistil." He will find them explained, with illustrations and examples, in the Glossary, pp. 242-60.

From the explanation that accompanies this last question we see clearly that the plant we are analysing comes under the first category, its flowers being isolated from one another and not collected into a compact mass, nor surrounded by a collarette of bracts as are the heads of a Cornflower or a Daisy. Taking, therefore, the first question, we find it followed by another bracket with the two following questions:—

- { *Flowers with two envelopes (calyx and corolla) differing in colour and texture?*
- { *Flowers with only one envelope or with two envelopes of similar colour and texture, or without any floral envelope?*

If we look at the flower that we have in our hands we shall see in it five white petals, which collectively constitute the *corolla*, and, outside these petals, another envelope made up of little green leaves or *sepals*. This outer envelope is the *calyx*. The flower that we are examining has two envelopes (calyx and corolla) differing in colour and texture. It is, therefore, the first question that fits our plant. This brings us to the two following questions, between which we have to choose:—

- { *Corolla not papilionaceous?*
- { *Corolla papilionaceous?*

We see that the corolla of a flower on our plant in no way resembles the figure representing a papilionaceous corolla, nor does it correspond to the description given of such a corolla. This brings us to the last two questions in the GENERAL KEY:—

- { *Petals free from one another down to their base?*
- { *Petals united to one another, at least at their base?*

In removing one of the white petals of our flower we find that we can easily detach it without tearing the other petals even at their base, so that it is clear that the five petals are free from one another down to the base. We are thus directed to key **A.—PLANTS WITH SEPARATE PETALS**, p. XX.

Turning to the next page we find this key or table and go on from bracket to bracket as we have just been doing. We can make out, without difficulty, that the Strawberry flower has more than 12 stamens; and it is, therefore, the upper bracket that fits it. In detaching the sepals of the calyx down to their bases we find that the petals and some of the stamens are removed at the same time. We choose, therefore, the first of the three questions enclosed in this bracket, and as the leaves of the Strawberry are not thick and fleshy, we find ourselves directed to the *natural order* ROSACEÆ, p. 54, as that to which our plant belongs.

We have thus found out that the Strawberry is a Rosacea. Let us now find out to what *genus* this plant belongs. To do this we open the book at the page to which we have been directed, i.e. page 54.

As the Strawberry is neither a tree nor a shrub we are directed to the next page. The flower has both calyx and corolla; the calyx is doubled by an epicalyx formed of little supplementary sepals as shown in Fig. P; the receptacle is swollen and fleshy (it is this that when ripe constitutes the strawberry); the leaves have each three leaflets and the petals are rounded. This brings us to Genus VII. **Fragaria**, commonly called *Strawberry*.

Our plant is thus a member of the natural order Rosaceæ and of the genus *Fragaria*. There are, however, two species in that genus; to which of them does the plant with which we are concerned belong?

At page 58 we find Genus VII. **Fragaria**. In examining withered blossoms, we see that the calyx is spreading and that the stalks of the flowers bear hairs pressed flat as is shown in Fig. FV. This shows the plant to be the **Fragaria vesca** or *Strawberry*. Under the name of the species we see the words "Woods and hedges", which means that this plant is ordinarily found in these places; "May-June", which signifies that the strawberry most often flowers from May to June; the letter "p" indicates that the plant is a perennial. The letters "VC" show that the plant is very common, and the sign ✕ means that it has "uses." ¹ These various uses are indicated in the alphabetical index of Latin names where the word **Fragaria** must be looked for and, following this generic name, the word "vesca", the specific name.

A useful exercise for the beginner will be to take some plants, the names of which are known to him, look out the name of each of them in the index and trace the plant back step by step to its natural order, noting how all the characteristics enumerated apply to it. Then, starting with the general key as we have just done in the case of the strawberry, the beginner can trace how the names of plants which he does not know can be determined.

II. SUGGESTIONS AS TO THE COLLECTION AND PRESERVATION OF PLANTS.

1. The collection of plants.—All parts of a plant are useful for study, and the underground stems and roots often serve as characters for determining species. If we wish to get a complete knowledge of a plant it is not enough to gather its flowers; the whole plant with its underground parts must be collected. This does not apply to trees or shrubs, of which we must content ourselves with branches bearing flowers or fruit.

For collecting plants with their underground stems and roots we can either use a moderately large knife with the blade fixed firmly in the handle, or a trowel which can be carried in a sheath slung from a shoulder-strap or belt. For the collection of aquatic or submerged plants which are difficult to reach, a useful instrument is a ring armed with

1. The explanations of signs and abbreviations used, notes, etc., will be found on p. XIV.

hooks such as anglers use to unhook their lines. This ring at the end of a tolerably long string can be thrown into the middle of a pond or stream on to a mass of floating or submerged plants; when the string is hauled-in, a certain number of specimens will be secured.

The collected plants may be surrounded by grass and closely wrapped in newspaper. On a botanical excursion, however, it is more convenient to carry them in a metal *vasculum*, such as can be obtained from any natural-history dealer; the *vasculum* is slung across the shoulders. Some botanists prefer to use a satchel or portable press. This can be made of two pieces of stout cardboard, slit at the four corners; straps of webbing or leather are passed through the slits and fastened with a buckle. Between the two sides of the press some doubled sheets of grey paper or even of common pale brown paper are placed; when a plant is gathered it is put at once between two of these sheets, its different parts being carefully spread out.

We must add that it is essential to have a pocket knife and a pocket lens; these two instruments are a great aid in the determination of species.

At the beginning of the book, on p. VI, is a four-inch or 10-centimetre scale which will be found useful for measuring plants or their various parts.

When possible, plants should be collected with both flowers and fruits, because the latter organs are sometimes indispensable for the determination of the species. Many plants still retain some flowers open when on other branches the fruit is almost completely formed or even ripe. It is for this reason very often better to collect specimens of plants somewhat late in their flowering season rather than when the first blossoms begin to open.

2. Preparation of plants.—If we wish to compare different plants with one another, it is most important to be able to preserve them, since they do not flower or fruit at the same time of year and as the members of the same genus grow in very different places.

The most convenient way of doing this is by drying collected specimens. It is a simple matter on returning from an excursion to place them carefully between the pages of an old book, such as an out-of-date dictionary. On the top of this is put a pile of other books or a weight of some fifty or sixty pounds, such as a heavy stone. From time to time the plants are shifted from one page to another until they are quite dry.

If a considerable number of plants has been collected, this plan is no longer convenient because of the number of books required and the time taken in moving the plants from one page to another. Nor is the method of drying plants between the pages of a book very expeditious. A more rapid and inexpensive method of preparing a large number of plants is as follows:—

A considerable quantity of non-absorbent paper is obtained, the best and cheapest is the pale brown paper commonly used in shops for wrapping up parcels. As soon as possible after they have been gathered, the plants are carefully placed between the two halves of a folded sheet of this

paper¹. The specimens from the vasculum or portable press are spread out one by one so as not to lie one on top of the other within the same sheet. It is extremely useful to put in with each specimen a label stating where it was collected, the date, and, if it has been determined, the name of the plant.

When the first sheet of paper has been filled, three or four other folded sheets one within the other are placed under it in an inverse position, i.e. with their folded side opposite to that of the sheet containing the specimens. Another three or four sheets are similarly placed on top; then another doubled sheet with another set of specimens each with its tickets and so on. When all the specimens gathered have been thus arranged, the whole is put under a board on which a heavy stone or other weight is placed. On the following day, the packet of plants is spread out on the ground or on boards in a dry place in such a way that each series rests upon and covers half of the preceding series. An hour later the whole can be collected together and put back under the press. Most plants can be soon dried in this way; those that remain moist must be treated for a longer time.

The best known method, however, consists in using grey blotting-paper; but this paper is more expensive and dries more slowly when the plants are put in it. It is, therefore, necessary to examine the specimens at frequent intervals, and to change and dry those sheets that are damp—a process which takes up a great deal of time without giving any better result.

Some specimens, such as fleshy and tuberous plants, are particularly difficult to dry. All succulent parts should be plunged into boiling water and wiped dry before being put into the folded paper for pressing. Some parts that are too thick, such as bulbs, the flower-heads of thistles, etc., may be split longitudinally, only one half being thus preserved. Some flowers that are very difficult to dry, such as those of orchids, will retain their colours if, after the lower end of the plant has been soaked in boiling water, a hot iron is passed carefully and not too heavily over the rest of plant a few sheets of tissue-paper are spread over the plant during the latter process.

3. Preservation of plants and the formation of a herbarium. — Once the specimens are dry, the simplest way to keep them is to leave them between the sheets of paper, or, perhaps preferably, between other sheets of the same size and perfectly dry, care being taken to separate different species if they have been pressed in the same folded sheet. To avoid the loss of specimens or labels it is well to fasten them to the paper. This is readily done with little strips of gummed paper 2-4 millimetres wide, adherent at each end, and crossing over the stems, leaf-stalks, branches or roots of the specimens. Narrow bands of non-adhesive paper can be fastened with a pin passing under the and securing both ends of the bands to the sheet. The labels can be similarly fixed, i. e. with

1. The most convenient size for these doubled sheets is 16-18 inches by 10-12 inches.

gum or pins; it is customary to place them at the bottom right-hand corner of the sheet.¹

Sheets for preservation in the herbarium can be arranged according to the classification in a Flora; it is useful to intercalate sheets bearing the names of the natural orders and genera, or the single sheets on which the plants are mounted may be placed within slightly larger folded sheets—often of coloured paper—for each genus or order.

Almost all dried plants deteriorate fairly rapidly as they are liable to be attacked by insects. To preserve the specimens, the destruction by insects must be made impossible. The methods employed for rendering the plants poisonous or for destroying any larvæ present are somewhat dangerous and lengthy.² The simplest plan is to put the herbarium sheets in cardboard or wooden boxes, or preferably in a cabinet, together with pieces of camphor or crude commercial naphthaline, or carbolic acid if placed in a suitable receptacle. If the insecticide be renewed from time to time the collections will be preserved.

1. The best gum is made by dissolving gum arabic in water, and adding a few drops of carbolic acid to keep off mould.

2. Plants are treated with mercury bichloride, a very active poison which it is dangerous to handle. It is dissolved in alcohol at 75° C., 40 grams to a litre, and the solution is then put in a large bath of glazed earthenware. The specimens are each dipped separately, removed with long-armed wooden tongs and put on sheets of paper where they are left to dry. Another method consists in destroying the insects every third or fourth year by putting the bundles of herbarium sheets in a big wooden box lined with zinc continued round the top to form a gutter to hold water. In this box is placed a saucer containing carbon bisulphide and the lid is then closed hermetically, its edges being submerged in the water in the gutter. The packets are left in the box for two days. Carbon bisulphide gives off so explosively inflammable a vapour that the box must be kept out of doors during the whole process.

EXPLANATION

OF THE SIGNS AND ABBREVIATIONS

in the Synoptical Tables and Indexes.

In the synoptical tables which are the keys to the genera and species, the name of the natural order or family is printed in heavy-type capitals at the left-hand side of the page, e.g. (p. 2):—

RANUNCULACEÆ.

It is often followed by certain information applicable to the plants belonging to the order.

The Latin name of each genus is printed in heavy type and preceded by a number indicating its sequence in the natural order. Following it and printed in italics is the English name of the genus which in some cases is identical with the Latin name, e.g. (p. 4):—

I.—*Ranunculus* L. *Ranunculus*.

The letter “L.” accompanying the Latin name is that of its author Linnaeus. These generic names are found in the right-hand column of those keys in which the natural order is broken up into its genera, and are repeated on the left-hand side where each is at the head of the key in which it is broken up into its species.

The names of the species are on the right-hand side of the page. The Latin name is in heavy type and followed by the abbreviated name of its author in ordinary type. Below is the English name of the species in italics, and certain letters in ordinary type capitals indicating whether the plant is common or rare. The habitat or place where the plant usually grows, the months in which it flowers, and the duration of the plant are given in small type. Example (p. 4):—

***R. repens* L.**
Creeping Buttercup. VC.
Fields; waste places: Apr.-Sept. P.

This without abbreviation means:—

***Ranunculus repens* Linnaeus.**
Creeping Buttercup. Very Common.
Fields; waste places; flowers April to September. Perennial.

The common or local name of the plant is in small type and enclosed in brackets below or after the description, e.g. (p. 4):—

[Pilewort.] after the description of **R. Ficaria**.

Each plant has two names, that of the genus and that of the species. The generic name is placed second in English but first in Latin. The author of the name is indicated in order to prevent confusion; this is necessary as some plants have been given different names by different botanists, and, in some cases, the same name has been applied to different plants. A list of the abbreviations of authors' names is given on pp. 261-3.

The habitat given below the name of the species is only a general indication of the places in which the plant can usually be found, and does not as a rule preclude its being found in other situations.

The months in which a plant flowers cannot be stated absolutely as in some localities certain plants have a very early flowering period and may come into flower a second time later in the year.

An index number above and to the right of a species refers to a foot-note where the name of a variety is given together with the characters which distinguish it from the species, e.g. (p. 58):—

R. rubiginosa L.⁴

Sweet Briar.

Hedges; thickets; June-July. P.

The index number "4" refers to the foot-note on p. 59 which is as follows:—

4. Var. *micrantha* Sm.: leaves faintly aromatic, styles almost glabrous.

Botanists are not always in agreement as to whether a plant should be considered a distinct species or a variety of a species. Some describe but few species and refer to them as varieties all forms more or less similar, while others describe all these forms as species and thus add greatly to their number. The first method is the more simple as the second often renders the determination of a plant almost impossible. Those who adopt the first point of view write *Rosa rubiginosa* L. var. *micrantha*, while the others write *Rosa micrantha* Sm.

I.—SIGNS AND ABBREVIATIONS.

1. Frequency of plant.—If a plant is confined to certain parts of the British Isles, the districts in which it is found are given in the index of Latin names (p. 264).

Following the English name of the plant in the keys to the species are the abbreviations given below:—

VC.—Very common or abundant in most districts.

C.—Common or to be found in most districts.

Loc.—Local or found only in certain districts.

R.—Rare or found only in a few places.

VR.—Very rare or found only in one or two places.

2. Time of flowering.—As already shown, the months during which a plant is in flower are indicated below the name of the species.

Jan.—January.	July—July.
Feb.—February.	Aug.—August.
Mar.—March.	Sept.—September.
Apr.—April.	Oct.—October.
May—May.	Nov.—November.
June—June.	Dec.—December.

3. Duration of plant.—The time of flowering is followed by a letter indicating the number of seasons during which the species usually lives.

- A.— Plant annual, i.e. lives only for one season.
 B.— „ biennial, i.e. lives for two seasons.
 P.— „ perennial, i.e. lives for more than two seasons, or indefinitely.

4. Properties and uses of plant.—When a plant has any peculiar properties, useful or harmful, or is employed in industry, medicine or agriculture, its name is followed by a cross:—

✚.—Plant having peculiar properties or uses.

The cross is repeated in the alphabetical index of Latin names where the properties or uses of the plant are stated.

5. Nectar and pollen yielding plants.—The most important of these plants are indicated by an asterisk in the alphabetical index of Latin names as being of interest to bee-keepers. The same species in different districts is not equally visited by bees.

★.—Plant much sought by bees.

6. Dimensions of plants.—The average height or length of a plant above the soil is given in feet and inches at the end of the description of the species. The length and breadth of parts of a plant are sometimes inserted in the text and, if small, they are stated in centimetres or millimetres. The dimensions are not absolute but are the ones usually found in the plant or its parts. The abbreviations used are as follows:—

- ft.—foot; feet.
 in.—inch; inches.
 cm.—centimetre; centimetres.
 mm.—millimetre; millimetres.

Note.—At the beginning of the book is a ten centimetre scale; each centimetre is divided into ten millimetres. The scale is approximately equal to four inches.

7. Names of authors.—The abridged name of the author follows the Latin name of the plant; the full name is given in the list on pp. 261-3.

The name following a variety is that of the author who has considered and described the plant as a species, not as a variety.

8. Other signs and abbreviations.—A small asterisk preceding the name of a plant [e.g. **T. europæa* L., p. 34] indicates that the plant is not truly native or indigenous to the British Isles. "Fig." means figure; "p." means page; "N.O." means natural order.

II.—INDEXES.

1. Latin names, pp. 264-96.—In this index the names of the natural orders and genera are arranged in alphabetical order. Under each genus are enumerated the species belonging to it, likewise in alphabetical order.

Synonyms are shown in italics. The same plant may be described under different names in different floras; these names or synonyms in italics and connected by the sign = (equals) are given in the table, the one adopted in this flora always being placed last. For example, under the genus *Mibora* Adans. is found *minima* Desv. = *verna* Adans.; the species is given the former name in some floras and the latter name in this and other floras. Again, the common ox-eye daisy has the synonyms *Pyrethrum Leucanthemum* Coss. and Germ., *Leucanthemum vulgare* Lam., *Chrysanthemum Leucanthemum* L.; it is the last name that is adopted in this flora.

The existence of synonyms is sometimes due to the same plant having been described by different botanists under various names, and sometimes to a lack of agreement amongst the authors as to the characters limiting a species, genus, or natural order.

Occasionally two authors have given the same name to two different plants. Thus in the index is seen *Trifolium agrarium* G. G. (not L.), which means that it is the plant that Grenier and Godron have called *Trifolium agrarium* and not the one designated under this same name by Linnæus.

The name of the genus is followed by its etymology and by the properties, if any, common to all the species of the genus. Useful or harmful plants are marked by a cross, and the properties of the plant are indicated.

2. English names, pp. 297-302.—In this index are given the English names of genera and species corresponding to the Latin names. The common names of the genera and species, if differing from the botanical names, are shown in italics.

3. French and English names, pp. 303-8.—The French names of genera and species are given in alphabetical order and followed by the corresponding English names.

III.—ABRIDGED KEY TO THE PRINCIPAL NATURAL ORDERS (pp. 314-15).

This key summarises in a few simple phrases the outstanding characters of about twenty of the principal natural orders. A knowledge of the key

is sufficient to enable three-quarters of the plants in the British flora to be placed at once in their natural orders without reference being made to the general key on pp. XIX-XXXIV. For example, a flower has *numerous stamens fixed on the calyx*; without further analysis, the plant can as a general rule be correctly placed in the natural order *Rosaceæ*.

An excellent exercise for students is to learn the key and habituate themselves to use it on their excursions.

Plants with flowers, in which there are stamens, or a pistil, or both.

Petals free from one another, down to their base.

Corolla not papilionaceous.

Flowers with two envelopes (calyx and corolla) differing in colour and texture.

Petals united to one another, at least at their base.

Corolla papilionaceous [i. e. irregular with one upper petal *a* (standard), two side petals, *a*, *a* (wings) and two lower petals united *c c* (keel).]



Leguminosæ, p. 42.

Trees or shrubs, resinous; flowers without stigmas.

F. Gymnospermous plants, p. XXXIV.

Leaves with parallel veins (as seen by transmitted light) and the similar parts of the flower arranged in 6's, 3's or less than 3.

Plants which are not resinous trees or shrubs; flowers with stigmas.

D. Monocotyledonous plants, p. XXXI.

Plants not exhibiting both these characters; leaves generally with more or less branching veins forming a network.....

C. Plants with only one floral envelope, p. XXVI.

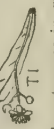
Flowers collected into a head, that is to say, packed close together, without stalks, terminating a stem or branch, and surrounded with a circle of bracts (involucre). [Familiar examples: what are commonly called the "flowers" of the Daisy, Dandelion, Thistle and Cornflower are in reality heads capitula of flowers.]

E. Plants with their flowers in heads, p. XXXIII.

Plants without flowers, never having either stamens, or pistil.

G. Cryptogamic plants p. XXXIV.


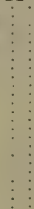







A.—PLANTS WITH SEPARATE PETALS.—

<p>Stamens and petals <i>attached to the sepals by their bases</i>. (<i>Leaves thick and fleshy</i>; 6-20 petals.....</p> <p>(When the sepals are removed from their base, the stamens and petals come away with them.)</p>		<p><i>Crassulaceæ</i>, p. 66.</p> <p>ROSACEÆ, p. 54.</p>
<p><i>Tree</i>; flower-stalk united to the bract TI;</p>		<p>TILIACEÆ, p. 34.</p>
<p>Stamens united to one another at least at the base.</p>	<p>Leaves opposite, entire; 3-5 styles; stamens in groups H, A.</p>	<p>HYPERICACEÆ, p. 38.</p>
<p>Herbaceous plants.</p>	<p>Flowers in an elongated raceme LL; petals much divided;</p>	<p>RESEDACEÆ, p. 23.</p>
<p>Leaves alternate.</p>	<p>Flowers in the axils of the leaves, singly or in clusters; petals entire or indented; calyx double MS, AO.</p>	<p>MALVACEÆ, p. 35.</p>
<p>Stamens free from one another down to their bases, and not attached to the sepals.</p>	<p>More than 16 petals NL, NA;</p>	<p>NYMPHÆACEÆ, p. 7.</p>
<p>Flower having more than 12 stamens.</p>	<p>Petals crumpled or very much twisted in the bud; pistil with a single ovary.</p>	<p>PAPAVERACEÆ, p. 8.</p>
<p>Less than 16 petals.</p>	<p>Petals not crumpled or twisted in the bud; pistil generally of numerous carpels.</p>	<p>CISTACEÆ, p. 21.</p>
<p>Pistil with carpels entirely free, or united by their inner margin.</p>	<p>3 sepals, 3 petals. { 6 stamens; sepals very different from the petals 9 stamens; sepals coloured almost like the petals.</p>	<p><i>Alismaceæ</i>, p. 163.</p> <p>RANUNCULACEÆ, p. 2.</p>
<p>at the base.</p>	<p>5 sepals; 5 or more petals.</p>	<p>GERANIACEÆ, p. 36.</p>
<p>than 12.</p>	<p>Flowers pink; 5 carpels, 5 stigmas. { GE; flower with the calyx and corolla removed.</p> <p>Flowers yellow; MN</p>	<p><i>Ranunculaceæ</i>, p. 2.</p>

Flower with no stamens or less
Calyx with sepals completely separate from one another, or slightly united
Pistil of carpels united into a single ovary, or pistil not developed.

Continuation of Key of plants with separate petals.



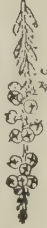



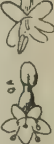

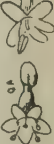



<p>Tree; flowers irregular, with 7 stamens H, rarely 5 or 6; leaves opposite, with leaflets arranged palmately.....</p>		HIPPOCASTANACEÆ, p. 40.
<p>Leaves, or at least the lower ones, divided.</p>	<p>Flowers not in an umbel; petals greenish, upper parts united V.</p>	ANPELIDACEÆ, p. 40.
<p>Shrub; or at least the lower ones, alternate.</p>		ARALIACEÆ, p. 82
<p>Flowers in an umbel H; plant climbing by roots or trailing on ground.</p>		RIBESACEÆ, p. 67.
<p>Tree or shrub.</p>		RHAMNACEÆ, p. 41.
<p>Leaves not opposite; petals much smaller than the sepals R.</p>		CELASTRACEÆ, p. 41.
<p>Leaves entire or toothed.</p>		CORNACEÆ, p. 82.
<p>Leaves all or mostly opposite.</p>		UMBELLIFERÆ, p. 70.
<p>Herbaceous plant; flowers in umbels DC, F, CY;</p>		
<p>Leaves alternate; stamens 5 SA, or absent; styles 2 SA, or absent.</p>		

Water plant submerged, or floating.	Flowers in whorls S; leaves much divided.		<i>Haloragaceæ</i> , p. 61.
Water plant with leaves all at the base and spinousy toothed.	Flowers not in whorls; leaves heart-shaped		<i>Hydrocharitaceæ</i> , p. 178.
	Pistil with separate carpels; leaves fleshy		<i>Crassulacæ</i> , p. 66.
6-10 stamens, or 2 stamens, or 10 stamens 5 of which are modified as scales bearing yellow glandular filaments (Grass of Parnassus).	Pistil with compound ovary not deeply cleft.		Calyx with 8-12 teeth LY;
		2-5 styles.	Ovary free; leaves opposite.
		Calyx with 2-5 teeth.	Ovary united at its base to the calyx; leaves in rosettes, alternate, or rarely opposite.
			Flowers hardly noticeable O, F; leaves more or less fleshy.
	Pistil with compound ovary not deeply cleft.	1 style with 1-5 stigmas.	5 petals; leaves all at the base PY.
		Flowers very evident	2 or 4 petals C, H; leaves not all at the base.
	Leaves entire.		ONAGRACEÆ, p. 62.
			CRASSULACEÆ, p. 66.
3, 4 or 5 stamens.	Leaves entire.	Pistil with compound ovary not deeply cleft.	<i>Linacæ</i> , p. 34.
			PARONYCHIACEÆ, p. 65.
Leaves lobed SE, or much divided H.			<i>Umbelliferæ</i> , p. 70.
			

Herbaceous plant not having both its flowers in umbels and its leaves alternate.

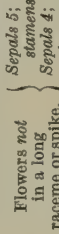
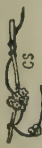
Plant not having the above characters.

B.—PLANTS WITH PETALS UNITED TO ONE ANOTHER.—

No stamens.	Plant climbing by tendrils BR.				Cucurbitaceæ, p. 64.	
	Plant not climbing.		{ Leaves opposite. Leaves all at the base and with spinous teeth... }		Valerianaceæ, p. 86. Hydrocharidaceæ, p. 178.	
Shrub.	Ovary attached to the calyx; leaves oval M, V.				VACCINIACEÆ, p. 109.	
	Ovary not attached to the calyx; leaves narrow, (C, EC) rarely oval.				ERICACEÆ, p. 109.	
Herbaceous plant.	Flower regular.		{ Leaves all at the base L; Leaves alternate, all along the stem; ovary attached to calyx... }		Plantaginaceæ, p. 142.	
	Flower irregular.		{ Leaves entire or toothed. Leaves 2, sometimes minute CO, FO; petals slightly united. Sepals 5, coloured, one with a pointed spur (Fig. D, p. 3)..... }		CAMPANULACEÆ, p. 107.	
5 stamens in 3 bundles; plant climbing by tendrils (Fig. BR, above).	Calyx regular, of 2 or 3 sepals F; leaves slightly fleshy.				Balsaminaceæ, p. 40.	
	Calyx attached to the ovary.		{ Flowers blue, without spur D; calyx green. Flowers yellow, spurred I; petals united in pairs; calyx coloured. Sepals 2, sometimes minute CO, FO; petals slightly united. Sepals 5, coloured, one with a pointed spur (Fig. D, p. 3)..... }		Fumariaceæ, p. 9.	
3 stamens or a single stamen.	Plant climbing; petals not united in a tube.				Ranunculaceæ, p. 2.	
	Plant not climbing; petals united in a tube OA, C.				Cucurbitaceæ, p. 64.	
4 stamens small.	Tree or shrub; 2 stamens; 4 petals united in a tube; leaves opposite.				Portulacæ, p. 64.	
	Plant not green, with leaves reduced to scales, parasitic on roots. B. Ovary divided into 4 distinct parts A, B. [Look at the base of the calyx x-tube of a withered flower.]				CUCURBITACEÆ, p. 64.	
Base, come away with it.]	Plant not climbing; petals united in a tube.				VALERIANACEÆ, p. 86.	
	Plant not climbing; petals united in a tube OA, C.				OLEACEÆ, p. 116.	
Base, come away with it.]	Plant not green, with leaves reduced to scales, parasitic on roots. B. Ovary divided into 4 distinct parts A, B. [Look at the base of the calyx x-tube of a withered flower.]				OROBANCHACEÆ, p. 132.	
	Plant not climbing; petals united in a tube OA, C.				LABIATÆ, p. 134.	

Stamens not attached to the corolla.

<p>Stamens attached to the corolla, at least at the base. [When the corolla is removed at its base, the stamens of which 2 are 2 stamens or 4 equal stamens or more than 4 stamens.]</p>	<p>Plant herbaceous, green leaves.</p>	<p>Ovary not divided externally into 4 parts.</p>	<p>Flowers almost regular V; lilac coloured, in a long spike; leaves opposite, deeply lobed VE; fruit separating into 4 parts when ripe.</p>	<p>Leaves all at the base and without stalks P; or a submerged plant with leaves cut up into narrow thongs V.</p>	<p>Plant not having the above characters; fruit dry with many seeds.</p>	<p>VERBENACEÆ, p. 142.</p>
<p>More than 12 stamens; petals hardly united at their bases;</p>	<p>Plant without leaves, not green; twining round other plants CS.</p>	<p>Sepals free, 2 of them large, PV, coloured;</p>	<p>Shrub with spinous leaves I, or at least the lower ones; flowers white.</p>	<p>Ovary divided externally into 4 parts [look at the base of the calyx-tube]; plant hairy.</p>	<p>LENTIBULARIACEÆ, p. 112. SCROPHULARIACEÆ, p. 126.</p>	<p>LENTIBULARIACEÆ, p. 112. SCROPHULARIACEÆ, p. 126.</p>
<p>Leaves neither opposite, nor whorled, nor all at the base.</p>	<p>Leaves not spinous.</p>	<p>Ovary not divided externally.</p>	<p>Leaves with 3 leaflets; petals bearded within.</p>	<p>Twining plant, with stamens free and funnel-shaped corolla S, A.</p>	<p>CONVOLVULACEÆ, p. 119.</p>	<p>CONVOLVULACEÆ, p. 119.</p>
<p>4 or 5 stamens and green leaves.</p>	<p>Plant not having the above characters.</p>	<p>Ovary free [within the corolla].</p>	<p>Flowers in a very long raceme L or spike.</p>	<p>Flowers not in a long raceme or spike.</p>	<p>SOLANACEÆ, p. 124.</p>	<p>SOLANACEÆ, p. 124.</p>
<p>Leaves opposite or whorled, or all at the base. (See continuation of key on the following page.)</p>	<p>Leaves opposite or whorled, or all at the base. (See continuation of key on the following page.)</p>	<p>Leaves opposite or whorled, or all at the base. (See continuation of key on the following page.)</p>	<p>Leaves opposite or whorled, or all at the base. (See continuation of key on the following page.)</p>	<p>Leaves opposite or whorled, or all at the base. (See continuation of key on the following page.)</p>	<p>SCROPHULARIACEÆ, p. 126.</p>	<p>SCROPHULARIACEÆ, p. 126.</p>



<p><i>opposite</i>, at least at the top of the branches; AC, AP, PP (p. 40); F.</p>	<p>Leaves compound, F;</p>	<p>Plant not having both calyx and corolla.</p>	<p>Leaves simple.</p>	<p>Plant whitish or silvery underneath Hl.</p>	<p>flowers in dense clusters.</p>	<p><i>Oleaceæ</i>, p. 116.</p>
<p>Tree or shrub scented either because of resinous wood or of leaves smelling strongly when rubbed.</p>	<p>Flowers collected in a ball PL;</p>	<p>Flowers with one floral envelope (calyx or calyx and corolla).</p>	<p>Floral leaves quite distinct.</p>	<p>Spinous shrub with leaves silvery underneath Hl.</p>	<p>Leaves persistent, oval, flowers in dense clusters.</p>	<p>ELÆAGNACEÆ, p. 152.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Chenopodiaceæ, p. 144.</p>
<p>Plant not climbing.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Euphorbiaceæ, p. 153.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Salicaceæ, p. 159.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>MYRICACEÆ, p. 162.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Coniferæ, p. 222.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>JUGLANDACEÆ, p. 157.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>PLATANACEÆ, p. 162.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Tiliaceæ, p. 34.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Berberidaceæ, p. 7.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Empetraceæ, p. 153.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Thymelaceæ, p. 152.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Rhamnaceæ, p. 41.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>ULMACEÆ, p. 156.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>Coniferæ, p. 222.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>SALICACEÆ, p. 159.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>BETULACEÆ, p. 162.</p>
<p>Leaves or buds not in opposite pairs.</p>	<p>Tree or shrub.</p>	<p>Tree; stamens numerous.</p>	<p>Not spinous.</p>	<p>Plant whitish or silvery.</p>	<p>Leaves not persistent; flowers in a long spike.</p>	<p>CUPULIFERÆ, p. 158.</p>

Plant neither a tree nor a shrub. (See continuation on next page.)

Continuation of key of plants with only one floral envelope.

Plant attached to the branches of trees, green or yellowish; flowers with parts in 4's; leaves opposite, VI.....



LORANTHACEÆ, p. 82.

Plant with flattened, green, leaf-like stems or fronds T, M:



LEMNACEÆ, p. 182.

Leaves deeply cut. { Flowers conspicuous, coloured; leaves 3 in a whorl. }
 solitary. { Flowers hardly visible; leaves 6-10 in a whorl. }

Flowers collected in clusters in upper part S; leaves 4 in a whorl S.....



HALORAGACEÆ, p. 61.

Leaves whorled.

Plant aquatic; flowers hardly visible HI; stamen 1.....



Leaves entire. { Stamens 8; plant with 4 broad leaves PA..... }
 Plant not aquatic. { Stamens 4-5; petals united at least at base. }
 No corolla; plant fleshy, maritime.

Plant not twining. { Plant twining round others, with slender stems bearing suckers. }

{ Corolla with petals united. }
 { Corolla with petals separated to the base (See Fig. MO, p. XXI). }

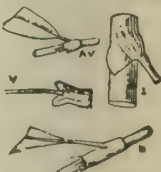
Leaves not developed, or reduced to scales.

Stem with a white liquid which exudes when the stem is broken; ovary, of 3 united carpels, borne on a short stalk, P, E, PL.....



EUPHORBIACEÆ, p. 153.

Leaves with stipules united to the petiole, and more or less sheathing the stem. (Examples:—H. V. T. AV.)



Leaves much divided, or toothed, and palmate; stamens many. { Flowers greenish or purple; lobes or leaflets not compound }
 { Flowers yellowish; leaflets compound M. }



Rosaceæ, p. 54.

Ranunculaceæ, p. 2

Leaves entire or nearly so; stamens 4-8. { Calyx with 1-4 divisions; greenish or absent..... }
 { Calyx with 5-6 divisions; white, greenish, reddish or pink. }

Naiadaceæ, p. 178.

Polygonaceæ, p. 148.

<p>Plants with stems and usually leaves, or at least leaf-scales, Leaves not</p> <p>Plants with leaves developed, and</p> <p>Leaves without stipules, or with stipules not united to the petiole, sheathing or non-sheathing.</p>	<p>More than 12 stamens.</p> <p>Flowers numerous, enclosed in a large horn-like bract AR; the whole is the inflorescence and not the flower; inflorescence a spike; flowers without either calyx or corolla. Pistil not divided, i.e. carpels united; 4 petals, (2 sepals in the bud-stage). Plant not having these characteristics.</p> <p>No horn-like bract.</p>	<p>Flowers united into a globular mass A,</p> <p>Leaves heart-shaped at the base E.</p> <p>Flowers not in a globular mass and leaves not heart-shaped at the base.</p>	<p>6-12 stamens.</p> <p>Leaves Calyx horn-like CL, or bell-shaped E.</p> <p>Flowers Calyx neither horn-like, nor bell-shaped; plant twining (TA, p. XXXII) Carpels many, forming an elongated cone in the middle of the flower. 4-5 short styles; leaves opposite, without stalks. 2 styles. Calyx yellow, or greenish-yellow, of 4-5 sepals. Calyx green, of 3 sepals.</p> <p>Ovary not divided.</p> <p>1 style; flowers greenish; leaves oval, opposite PP.</p>	<p>Plant climbing by its twining stems.</p> <p>Leaves compound; palmate C.</p> <p>Flowers in umbels, DC, F, rarely reduced to 2 rays HI; 2 styles, 5 stamens SA; or flowers with 2 styles and no stamens, or with 5 stamens and no styles.</p> <p>Plants not having these characteristics.</p>	<p>0-5 stamens.</p> <p>Leaves compound; palmate C.</p> <p>Flowers in umbels, DC, F, rarely reduced to 2 rays HI; 2 styles, 5 stamens SA; or flowers with 2 styles and no stamens, or with 5 stamens and no styles.</p> <p>Plants having neither their flowers in umbels, nor their leaves peltate.</p> <p>Leaves peltate H.</p> <p>Flowers enclosed in a large, horn-like bract (Fig. AR, above).</p> <p>Not. (See continuation on following page.)</p>	<p>Araceæ, p. 182.</p> <p>Papaveraceæ, p. 8.</p> <p>Ranunculaceæ, p. 2.</p> <p>Caprifoliaceæ, p. 82.</p> <p>ARISTOLOCHIACEÆ, p. 152.</p> <p>DIOSCOREACEÆ, p. 169.</p> <p>Ranunculaceæ, p. 2.</p> <p>Caryophyllaceæ, p. 26.</p> <p>Saxifragaceæ, p. 68.</p> <p>Euphorbiaceæ, p. 153.</p> <p>Lythraceæ, p. 61.</p> <p>Dioscoreaceæ, p. 169.</p> <p>CANNABINACEÆ, p. 156.</p> <p>Umbelliferæ, p. 70.</p> <p>Araceæ, p. 182.</p>
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Continuation of key of plants with only one floral envelope.

Flowers not green (calyx coloured or indistinct, corolla absent or coloured).	Flowers yellow, irregular; calyx coloured, with a spur; stamens 5; petals coloured 4, united 2 and 2.....	<i>Balsaminaceæ</i> , p. 40. <i>Primulaceæ</i> , p. 113. <i>Valerianaceæ</i> , p. 86.
	Flowers bluish, } Calyx coloured; corolla absent; stamens 5..... white or pink. } Calyx indistinct; corolla coloured; stamens 1-3.....	<i>Onagraceæ</i> , p. 62.
Flower with a single stigma, or with no pistil developed.	<div></div> <div></div> <div> <p>(Water plant; stamens 4; calyx with united sepals 1.....)</p> <p>Plant without hairs; leaves very narrow; flowers in a raceme, TH, T;</p> </div> <div> <p>stigma not tufted; flowers yellowish white inside.</p> </div>	<i>SANTALACEÆ</i> , p. 152. <i>URTICACEÆ</i> , p. 157. <i>Chenopodiaceæ</i> , p. 144.
5 stamens and 5 little threads, seldom fewer, representing the petals; plant usually having several prostrate stems; leaves united in pairs or with membranous stipules.	<div></div> <div></div> <div></div> <div></div>	<i>Paronychiaceæ</i> , p. 65.
	[Examples: HH, A, CL, L.]	<i>Naiadaceæ</i> , p. 178.
Flowers with several stamens.	<div>Plant aquatic; submerged or floating.</div> <div>4 stamens; calyx of 4 sepals; flowers in a spike.....</div> <div>1-2 stamens; calyx of 2 sepals; flowers solitary CA.....</div>	<i>CALLITRICHACEÆ</i> , p. 156.
1-5 stamens not accompanied by thread-like petals.	<div>Plant not submerged or floating.</div> <div>Leaves all long and very narrow; fruit with 4 valves SP;</div> <div>sepal separated to the base; stamens 4.....</div>	<i>Caryophyllaceæ</i> , p. 26.
Flowers greenish, at least outside, not having both calyx and corolla.	<div>Plant not submerged or floating.</div> <div>Flowers surrounded by membranous bracts.....</div> <div>Leaves with rounded divisions. Leaves not with rounded divisions.</div>	<i>AMARANTACEÆ</i> , p. 143. <i>Cruciferae</i> , p. 10. <i>Chenopodiaceæ</i> , p. 144. <i>Euphorbiaceæ</i> , p. 153.

Flower very irregular; ovary inferior and often resembling externally the pedicel of the flower; anthers 1 or 2; stamens and style united to form a central column.

ORCHIDACEÆ, p. 172.

Plant not spinous; anthers extrorse.

IRIDACEÆ, p. 170.

Plant spinous R; anthers introrse.

Liliaceæ, p. 164.

Plant { Flowers dioecious; carpels united.
aquatic. { Flowers monœcious; carpels free.

HYDROCHARIDACEÆ, p. 178.

Alismaceæ, p. 163.

Plant not aquatic; flowers perfect; 2-leaved.

Liliaceæ, p. 164.

Ovary inferior PN, G.

AMARYLLIDACEÆ, p. 171.

3 green sepals; 3 coloured petals: water plant.

ALISMACEÆ, p. 163.

Leaves developed at the same time as the flowers.



Leaves not developed at the same time as the flowers; flower with a very long tube CO.

LILIACEÆ, p. 164.

Floral envelope entirely coloured.

Ovary superior.



Stamens 2; flowers in an umbel BU;

water plant with pink flowers.

Alismaceæ, p. 163.

Plant aquatic, with white or pink flowers.

Hydrocharidaceæ, p. 178.

Plant not aquatic, with yellowish flowers, numerous slender twigs resembling leaves.

Liliaceæ, p. 164.

Flowers membranous or not brightly coloured. (See next page.)

Flowers coloured, not membranous.

Flowers regular.

Continuation of key of Monocotyledonous plants.

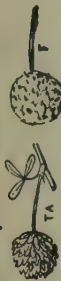
Floral envelope of 6 parts (3 sepals and 3 petals) all alike.	Plant herbaceous;	Plant not aquatic (and submerged).	Plant not twining.	Flowers not mem- branous.	Flowers not green, leaf-like; flowers axillary.	Liliaceæ, p. 164.
	Plant not spinous.	Plant not aquatic (and submerged).	Plant not twining.	Flowers not mem- branous.	Branches green, leaf-like; flowers axillary.	Hydrocharidaceæ, p. 178.
Plant usually not floating; leaves with long sheathing bases.	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	DIOSCOREACEÆ, p. 169.
	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	JUNCACEÆ, p. 184.
Floral envelope of less than 6 parts.	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	Liliaceæ, p. 164.
	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	Naiadaceæ, p. 178.
Flowers membranous, green or not brightly coloured.	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	LEMNACEÆ, p. 182.
	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	Typhaceæ, p. 183.
Flowers membranous, green or not brightly coloured.	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	NAIADACEÆ, p. 178.
	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	ERIOCAULACEÆ, p. 182.
Flowers membranous, green or not brightly coloured.	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	TYPHACEÆ, p. 183.
	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	ARACEÆ, p. 182.
Flowers membranous, green or not brightly coloured.	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	Cyperaceæ, p. 186.
	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	GRAMINEÆ, p. 198.
Flowers membranous, green or not brightly coloured.	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	CYPERACEÆ, p. 186.
	Plant submerged, floating.	Plant having a stem and leaves.	Flowers collected in balls.	Flowers not in balls.	Flowers not in balls.	

E.—PLANTS WITH THEIR FLOWERS IN HEADS.—

Heads of two kinds, some with staminate, others with pistillate flowers; monœcious; involucre spinous X; leaves stalked, X, S.



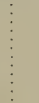


Corolla papilionaceous; leaves with three leaflets; flower head glo-bular TA, F.



Anthers *more or less united into a tube through which the style passes.* } Flowers blue, rarely white; each flower in the head with 5 petals almost separated down to the base; anthers spreading out at the apex in a white star; seeds several.
Each flower of the head with petals united in a tube, at least at the base. (See for example Fig. 77, p. 251, and Fig. 129, p. 258.)

Heads all alike and corolla not papilionaceous.

Stamens 5.	Plant with leathery spinous leaves: involucre spinous E.		Flowers blue or white. Flowers pink; stalk without leaves below the flower head AR.	Umbelliferæ, p. 70. Campanulacæ, p. 107.
Stamens 4.	Leaves all radical; flowers membranous. } Leaves opposite; ovary united to the calyx.		Leaves not transparent. Leaves transparent.	PLUMBAGINACEÆ, p. 143. Plantaginacæ, p. 142. Eriocarulacæ, p. 182.
Stamens 6, 3 or 2.	Plant without a bulb. } Plant with a bulb at its base.		Flowers collected into several balls. Floral envelope with 6 distinct segments. Floral envelope with 5 lobes. Floral envelope not evident or made up of hairs.	DIPSACEÆ, p. 87. Liliacæ, p. 164. Typhacæ, p. 183. Juncacæ, p. 184. Valerianacæ, p. 86. Cyperacæ, p. 186.

AMBROSIACEÆ, p. 107.

Leguminosæ, p. 42.

Campanulacæ, p. 107.

COMPOSITEÆ, p. 88.

Umbelliferæ, p. 70.

Campanulacæ, p. 107.

PLUMBAGINACEÆ, p. 143.

Plantaginacæ, p. 142.

Eriocarulacæ, p. 182.

DIPSACEÆ, p. 87.

Liliacæ, p. 164.

Typhacæ, p. 183.

Juncacæ, p. 184.

Valerianacæ, p. 86.

Cyperacæ, p. 186.

F.—GYMNOSPERMOUS PLANTS.—

Anthers borne on scales in cones; seeds enclosed in dry cones, or in a fleshy covering; tree or shrub, resinous or not resinous.

CONIFERÆ, p. 222.

G.—CRYPTOGAMIC PLANTS.—

<p>Plant not rooted, floating, free.</p> <p>Plant usually rooting aquatic.</p> <p>Plant often solitary, in two parts, one green, the other bearing sporangia L, OV.</p> <p>Leaves or fronds well developed; stem underground.</p>	<p>Stem not creeping I.</p> <p>Stem creeping PI; sporangia in globular cases at base of leaves PI.</p> <p>Lower part of frond barren, upper part fertile.</p> <p>Fronds several or many; not bipartite.</p> <p>Fronds not like above.</p> <p>Branches whorled AR; leaves in form of small membranous tubular sheaths AV.</p>	<p>Stem not creeping I.</p> <p>Stem creeping PI; sporangia in globular cases at base of leaves PI.</p> <p>Lower part of frond barren, upper part fertile.</p> <p>Fronds translucent; sori distinct, marginal.</p> <p>Fronds not translucent; sori on under surface.</p> <p>Branches whorled AR; leaves in form of small membranous tubular sheaths AV.</p>	<p>Stem not creeping I.</p> <p>Stem creeping PI; sporangia in globular cases at base of leaves PI.</p> <p>Lower part of frond barren, upper part fertile.</p> <p>Fronds translucent; sori distinct, marginal.</p> <p>Fronds not translucent; sori on under surface.</p> <p>Branches whorled AR; leaves in form of small membranous tubular sheaths AV.</p>	<p>Stem not creeping I.</p> <p>Stem creeping PI; sporangia in globular cases at base of leaves PI.</p> <p>Lower part of frond barren, upper part fertile.</p> <p>Fronds translucent; sori distinct, marginal.</p> <p>Fronds not translucent; sori on under surface.</p> <p>Branches whorled AR; leaves in form of small membranous tubular sheaths AV.</p>	<p>Stem not creeping I.</p> <p>Stem creeping PI; sporangia in globular cases at base of leaves PI.</p> <p>Lower part of frond barren, upper part fertile.</p> <p>Fronds translucent; sori distinct, marginal.</p> <p>Fronds not translucent; sori on under surface.</p> <p>Branches whorled AR; leaves in form of small membranous tubular sheaths AV.</p>	<p>Stem not creeping I.</p> <p>Stem creeping PI; sporangia in globular cases at base of leaves PI.</p> <p>Lower part of frond barren, upper part fertile.</p> <p>Fronds translucent; sori distinct, marginal.</p> <p>Fronds not translucent; sori on under surface.</p> <p>Branches whorled AR; leaves in form of small membranous tubular sheaths AV.</p>	<p>Stem not creeping I.</p> <p>Stem creeping PI; sporangia in globular cases at base of leaves PI.</p> <p>Lower part of frond barren, upper part fertile.</p> <p>Fronds translucent; sori distinct, marginal.</p> <p>Fronds not translucent; sori on under surface.</p> <p>Branches whorled AR; leaves in form of small membranous tubular sheaths AV.</p>
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Plants with true roots springing from their underground stems.

Leaves very small in comparison to the stems; stems aerial and underground.

Plants without true roots, having sometimes absorbent hairs on their lower surface.

SALVINIACEÆ, p. 233.

ISOETACEÆ, p. 233.

MARSILIACEÆ, p. 233.

OPHIOGLOSSACEÆ, p. 230.

OSMUNDACEÆ, p. 230.

HYMENOPHYLLACEÆ, p. 229.

POLYPODIACEÆ, p. 224.

EQUISETACEÆ, p. 231.

LYCOPODIACEÆ, p. 232.

SELAGINELLACEÆ, p. 232.

SYNOPTICAL ILLUSTRATED TABLES
of the
NATURAL ORDERS & GENERA
or
ILLUSTRATED DICHOTOMOUS KEYS
to the
GENERA, SPECIES & VARIETIES

RANUNCULACEÆ.

This N.O. includes plants of very varied appearance. Many of them are poisonous because of the presence of alkaloids, as for example *aconitine* and *anemonine* which are used in medicine. Several of the species growing in a wild state are also cultivated in gardens, e.g. Monkshood, Columbine, Globe-flower, Pasque-flower.

Shrub, climbing; leaves *opposite*; sepals 4 C white; corolla *absent*.



II. *Clematis* L., p. 5.
Clematis.

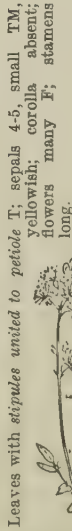
Involute of 3 green bracts below flower AN, PL; sepals large, petal-like.

Petals *absent*.



IV. *Anemone* L., p. 6.
Anemone.

Petals *very small*, tubular.



Leaves with *stipules* united to *petiole* T; sepals 4-5, small TM, yellowish; corolla *absent*; flowers many F; stamens long.



III. *Thalictrum* L., p. 6.
Thalictrum.

Sepals *golden yellow*, large; petals small, *inconspicuous*.

Carpels on a long receptacle SCE.

Present but free.

absent.

herbaceous.

not spurred.

Petals *yellow or white*, pocket present at base (e, Fig. R).



I. *Ranunculus* L., p. 4.
Ranunculus.

Petals *scarlet*, no pocket at base.



V. *Adonis* L., p. 6.
Adonis.

VIII. *Trollius* L., p. 6.
Trollius.

[illegible]

I. *Ranunculus* L. *Ranunculus*. —
Sepals 3; *petals* 6-9, yellow; leaves cordate F; underground tubers many,
 cylindrical; plant glabrous; 4-8 in. [Pilewort.]

Carpels 3-8, *toothed*, *spinous* AR; flowers yellowish-green; 8-20 in.

Middle lobe of leaf *stalked* RE; stem usually
creeping, rooting RE; peduncle furrowed;
 8-24 in.

Sepals
spread-
ing A.



Carpels
 more
 than
 8, not
toothed.

Middle lobe of leaf not
stalked; stem not
creeping.

Carpels *glabrous* and receptacle glabrous AC; peduncle
 smooth A; 1-3 ft.



Carpels *downy*; petals sometimes missing;
 8-12 in. [Goldilocks.]



Carpels *more than* 100, on a *long* receptacle SC; leaves glabrous; flowers small;
 stem hollow; 8-24 in.



Sepals
reflexed
 BU.



Carpels
fewer than
 100, on a
rounded
 receptacle.

Carpels bearing
tubercles PH;
 stem not
 bulbous.



Tubercles *rounded*, near margin PH
 4-16 in.

Tubercles *sharp or hooked*, over whole surface;
 3-12 in.



Carpels *smooth* B; stem bulbous at base; 8-24 in.

1. *R. Ficaria* L. \star
Lesser Celandine. VC.
 Damp places: Mar.-May. P.

2. *R. arvensis* L.
Corn Crowfoot.
 Cornfields: May-July. A.

3. *R. repens* L.
Creeping Buttercup. VC.
 Fields; waste places: Apr.-Sept.
 P.

4. *R. acris* L.
Upright Buttercup. VC.
 Fields; waste places: May-
 Sept. P.

5. *R. auricomus* L.
Wood Crowfoot.
 Woods; thickets: Apr.-May.
 P.

6. *R. sceleratus* L. \star
Celery-leaved Crowfoot.
 Margins of water: May-Sept. A.

7. *R. Philonotis* Ehrh.
Hairy Crowfoot.
 Damp fields: May-Sept. P.

8. *R. parviflorus* L.
Small-flowered Crowfoot.
 R.
 Fields; banks: May-June. A.

9. *R. bulbosus* L. \star
Bulbous Buttercup. VC.
 Fields; waste places: May-Aug.
 P.

Flowers yellow; plant never floating.
 Leaves divided.

petals usually 5.

10. **R. Flammula** L. \star
Lesser Spearwort.
 Wet places: June-Sept. P.
11. **R. Lingua** L. \star
Great Spearwort.
 Pools; ditches: June-Aug. P.
12. **R. hederaceus** L.¹
Ivy-leaved Crowfoot.
 Shallow water: May-Aug. P.

13. **R. fluitans** Lam.
Floating Ranunculus.
 Rivers: May-Aug. P.

14. **R. divaricatus** Schrk.
Divaricate Ranunculus.
 Ponds; ditches: June-Aug. P.

15. **R. tripartitus** DC.
Tripartite Ranunculus.
 V.R.
 Ponds: Apr.-July. P.

16. **R. aquatilis** L.²
Water Crowfoot. C.
 Ponds; rivers: Apr.-Aug. P.

1. **C. Vitalba** L. \star
Traveller's Joy.
 Hedges: June-Aug. P.

- { Carpels 20-30; leaves on middle of stem stalked F;
 peduncles furrowed; 4-16 in.
- { Carpels 60-80; leaves on middle of stem not stalked
 L; peduncles not furrowed; 2-5 ft.

- { Leaves rounded, cordate, lobed H;
 petals equalling sepals H;

- { Leaves divided into long fine segments FL; petals 2-3
 times larger than sepals FL; peduncles 1 1/2-3 in.; plant
 submerged. [Water Crowfoot.]

- { Leaves cut into fine short segments spreading like a fan
 DI, dark green; plant submerged. [Water Crowfoot.]

- { Petals scarcely longer than sepals T; stipules
 of upper leaves united throughout 1/3 their
 length to petioles. [Water Crowfoot.]

- { Petals 2-3 times longer than sepals A; sti-
 pules of upper leaves united throughout
 2/3 their length to petioles.

- { Leaves not at the same
 time spreading like a
 fan and submerged.

Sepals 5 ;
 Leaves
 entire
 F, L.

Receptacle
 glabrous.
 [See Fig. AC,
 p. 4.]

Receptacle
 hairy.

Flower white; plant usually floating.

II. **Clematis** L. *Clematis*.—(Fig. C, p. 2.) Plant woody; petioles twining round support; styles persistent, feathery in fruit; flowers in loose panicles; length variable. [Old Man's Beard.]

1. Var. *Lenormandi* F. Schultz: leaves deeply divided, petals twice as long as sepals, carpels acute, Loc.—2. Var. *trichophyllus* Chaix: petals twice as large as sepals, stamens 12-15. C.; var. *confusus* Godr.: receptacle oval, tapering, petals not touching one another, stamens longer than pistil; var. *Beudotis* Godr.: receptacle oval, tapering, stamens shorter than pistil; var. *Dronotii* F. Schultz: flowers very small, plant slender.

III. Thalictrum L. Thalictrum. [Meadow Rue.] — (Figs. T, TM, p. 2.)
Leaves nearly all radical; flowers in a simple raceme; 2-6 in.



Leaves not nearly all radical; inflorescence a panicle.

Flowers erect F; leaves longer than broad F; inflorescence compact; 2-5 ft.

Flowers drooping M; leaves about as broad as long M; inflorescence not compact; ½-4 ft.



IV. Anemone L. Anemone. —
Styles feathery AP; sepals violet-purple, silky outside PL; 4-10 in.

Flowers solitary AN. Sepals white or pinkish, glabrous AN; 4-8 in. [Wind-flower.]

Flowers 1-2 above each involucre; sepals yellow; stalks of involucral bracts short; 4-8 in.

Flowers solitary AN. Sepals bright blue; 4-8 in.

V. Adonis L. Adonis. — (Fig. AA, p. 2.) Petals scarlet, dark spot at base; sepals glabrous; carpels beaked, beak straight A; 6-12 in.



VI. Myosurus L. Mouse-tail. — (Fig. MM, p. 3.) Carpels numerous in a very long cone MM; leaves narrow, fleshy; flowers solitary, petals small; 1-6 in.

VII. Caltha L. Caltha. — (Fig. CP, p. 3.) Carpels 5-10; leaves heart-shaped at base, crenate; flowers large; plant glabrous; 8-20 in.

VIII. Trollius L. Trollius. — Flowers globular, 1-1 ½ in. across; leaves usually 5-lobed, segments deeply cut; plant glabrous; 8-18 in.

IX. Eranthis Salisb. Eranthis. — Flower solitary; sepals yellow; radical leaves 3-7 lobed; segments narrow and radiating; 3-6 in.

1. T. alpinum L.
Alpine Thalictrum. Læo.
Wet places: July-Aug. P.

2. T. flavum L.
Yellow Thalictrum. F.
Wet places: June-Aug. P.

3. T. minus L.
Lesser Thalictrum.
Dry places: June-Aug. P.

1. A. Pulsatilla L. H
Pasque-flower. Loc.
Open pastures: Apr.-June. P.

2. A. nemorosa L.
Wood Anemone. C.
Woods: Apr.-May. P.

***3. A. apennina L.**
Blue Anemone. R.
Plantations: Apr.-May. P.

***4. A. ranunculoides L.**
Yellow Anemone. R.
Plantations: Apr.-May. P.

1. A. autumnalis L.
Pheasant's Eye. R.
Corn-fields: June-Sept. A.

1. M. minimus L.
Mouse-tail. Loc.
Fields: Apr.-June. A.

1. C. palustris L.
Marsh Marigold. C.
Wet places: Apr.-June. P.

1. T. europæus L.
Globe Flower.
Moist mountain pastures: June-Aug. P.

***1. E. hyemalis Salisb.**
Winter Aconite. R.
Thickets: Feb.-Mar. P.

X. *Helleborus* L. *Hellebore*.—(Fig. HF, p. 3.) The Christmas Rose belongs to this genus.



Sepals erect F; petals tubular, shorter than stamens; bracts entire; 1-2 ft. [Setterwort.]

Sepals spreading V; petals tubular, about as long as stamens V; bracts divided; 1-1 ½ ft. [Bear's-foot.]



XI. *Nigella* L. *Nigella*.—(Fig. N, p. 3.) Carpels more or less united; segments of leaves very narrow; flowers pale blue; 4-12 in. [Devil-in-the-bush; Love-in-a-mist.]

XII. *Aquilegia* L. *Columbine*.—(Fig. AV, p. 3.) Carpels usually 5; sepals 5, blue or purple; petals 5, spurred, blue or purple; 1 ½-3 ft.

XIII. *Delphinium* L. *Larkspur*.—(Fig. D, p. 3.) Carpels usually 1; calyx spurred; petals joined and prolonged within the spur; sepals and petals blue, rarely rose or white; raceme many-flowered; 8-24 in.

XIV. *Aconitum* L. *Aconite*.—(Fig. A, p. 3.) Plant glabrous; leaves 3-7 lobed, segments deeply cut; raceme many-flowered; 1 ½-2 ½ ft. [Wolfsbane.]

XV. *Actæa* L. *Baneberry*.—(Fig. AS, p. 3.) Cappel 1; leaves large, compound; leaflets deeply cut; fruit a berry, nearly black; 1-2 ft. [Herb Christopher.]

XVI. *Pæonia* L. *Pæony*.—Carpels 2-5; Radical leaves twice trifoliate, margins entire, glabrous below; fruit a follicle, large, downy; 1-2 ft.

BERBERIDACEÆ. The Barberry is disliked by agriculturists as it bears a fungus which produces the rust on corn.

I. *Berberis* L. *Barberry*.—(Fig. B, p. XXI.) Shrub; leaves simple, toothed, clustered, or separate and modified into 3-lobed spines; flowers yellow; fruit a berry, red; 3-9 ft.

NYMPHÆACEÆ. Water-lilies are often grown in ornamental waters.

Flowers white; sepals 4; petals oval; stamens fixed around wall of ovary (Fig. NA, below).

Flowers yellow; sepals 5; petals rounded; stamens fixed on receptacle (Fig. NL, below).



I. *Nymphaea* L. *Nymphaea*.—Fruit more or less globular, marked by scars left by stamens; length variable.



II. *Nuphar* Sm. *Nuphar*.—Fruit narrowed above, not marked by scars; length variable. [Brandy-bottle.]

1. *H. foetidus* L. *✠*
Fetid Hellebore. Loc.
Open stony places; Mar.-Apr. P.

2. *H. viridis* L.
Green Hellebore. R.
Thickets; Mar.-Apr. P.

1. *N. arvensis* L. *✠*
Nigella.
Gardens; June-Aug. A.

1. *A. vulgaris* L.
Common Columbine.
Thickets; May-June. P.

*1. *D. Ajacis* L.
Field Larkspur. R.
Corn-fields; June-Aug. A.

1. *A. Napellus* L. *✠*
Monkshead. R.
Damp places; July-Aug. P.

1. *A. spicata* L. *✠*
Baneberry. R.
Woods; May-June. P.

*1. *P. coralina* Retz.
Pæony. VR.
Rocky cliffs; May-June. P.

1. *B. vulgaris* L.
Common Barberry.
Hedges; thickets; May-June. P.

I. *Nymphaea* L., p. 7.
Nymphaea.

II. *Nuphar* Sm., p. 7.
Nuphar.

1. *N. alba* L. *✠*
White Water-lily.
Water; June-Sept. P.

1. *N. luteum* L.
Yellow Water-lily.
Water; June-Sept. P.

PAPAVERACEÆ.

The plants in this N. O. contain a thick liquid, i.e. *latex*.

The sap of the Opium Poppy constitutes *opium*.

Fruit *globular* or *oblong*, opening by pores; stigmas rayed.

(Figs. A, R, D, below.)

Flowers *red* or *white*; stigmas 4-20;



Flowers *yellow*; stigmas 4-6.



Leaves *not amplexicaul*;

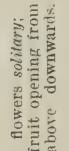


flowers *almost in an umbel* C; fruit opening from below upwards CH.

Fruit *linear*, opening by valves; stigmas not rayed.



Leaves *half-amplexicaul* G;



flowers *solitary*; fruit opening from above downwards.

Flowers *violet*; stigmas 3-4; fruit opening from above downwards.

I. *Papaver* L. *Poppy*.—(Figs. PA, P, above.)

Fruit *oval* H; petals purplish-red; 4-8 stigmas; 6-20 in.

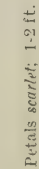


Fruit *elongated* A; petals pale red; 4-6 stigmas; 6-16 in.



Ovary and fruit covered with stiff hairs H, A.

Fruit *nearly as wide as long* R; flower usually 2 in. across.



Petals *scarlet*; 1-2 ft.

Petals usually *bluish-white*, spotted at base; 1-3 ft.



Fruit *longer than wide* D; flower usually about 1 in. across; petals pale red; 1-2 ft.

II. *Meconopsis* VIG. *Meconopsis*.—Fruit oblong, glabrous; leaves glabrous on under surface; flowers large, yellow on long peduncles; 1-2 ft.

III. *Chelidonium* L. *Celandine*.—(Figs. C, CH, above.) Leaves glaucous, lobes rounded; 1-2 ft. (Swallow-wort.)

IV. *Glaucium* Hill. *Glaucium*.—(Fig. G, above.) Stems and fruits glabrous; petals golden-yellow; fruit many inches long, often curved; plant very glaucous; 1-2 ft. (See *Poppy*.)

V. *Rœmeria* Med. *Rœmeria*.—Petals violet, falling before noon; 1-1½ ft. (Violet-horned *Poppy*.)

I. *Papaver* L., p. 8. *Poppy*.

II. *Meconopsis* VIG., p. 8. *Meconopsis*.

III. *Chelidonium* L., p. 8. *Celandine*.

IV. *Glaucium* Hill, p. 8. *Glaucium*.

V. *Rœmeria* Med., p. 8. *Rœmeria*.

1. *P. hybridum* L. *Rough-headed Poppy*. R. Corn-fields: June-Aug. A.

2. *P. Argemone* L. *Long Rough-headed Poppy*. Corn-fields: June-July. A.

3. *P. Rhœas* L. *Field Poppy*. C. Corn-fields: May-July. A.

*4. *P. somniferum* L. *Opium Poppy*. R. Fens near the sea: June-Aug. A.

5. *P. dubium* L. *Long-headed Poppy*. Corn-fields: May-July. A.

1. *M. cambrica* VIG. *Welsh Poppy*. Rocky places: June-Aug. P.

*1. *C. majus* L. *Great Celandine*. Shady waste places: May-Aug. P.

1. *G. flavum*. Cr. *Yellow-horned Poppy*. Sandy shores: June-Sept. B.

*1. *R. hybrida* DC. *Common Rœmeria*. Chalky corn fields: May-June. A.

Fruit *globular* (Figs. O, P, below), indehiscent, 1-seeded; flowers white, pink, purple, often spotted near apex.
Fruit *long* CS, dehiscent, many-seeded; flowers yellow, pink, purple; spur *OC*, long or curved CO.

I. *Fumaria* L. *Fumitory*.—

Sepals *narrower* than corolla OF; fruit-stalk straight; fruit wider above O; 6-24 in.

Fruit with *two little pits* near apex O, FC.

Sepals *broad*er than corolla S; fruit *globular* FC.

Fruit-stalk *curved*; pits small, deep; plant climbing.

Fruit-stalk { Pits *faint*; neck of fruit narrow; 6-24 in.
straight. }

{ Pits *broad, shallow*; neck of fruit broad; plant climbing.

Fruit *pointed* at apex P; sepals small, 5-10 times shorter than corolla PA; flowers whitish; 4-24 in.

Fruit *without pits* near apex P, V.

Fruit *rounded* at apex V. { Sepals *small*, 10 times shorter than corolla VA, flowers not numerous or dense, purplish or whitish; 4-24 in.

{ Sepals *large*, broader than corolla D; flowers numerous, dense, pink or purplish; 8-24 in.

II. *Corydalis* DC. *Corydal*.—(Figs. CS, CO, above.)
Tendrils *present*, terminating leaves CL;

Tendrils *absent*; plant not climbing.

{ Flowers *yellow*; aerial stems many; no underground tuber; bracts much smaller than pedicels; 4-12 in.

{ Flowers *purplish*; aerial stems 1-2; underground tuber present; bracts large, often divided; 4-8 in.

I. *Fumaria* L., p. 9.
Fumitory.
II. *Corydalis* DC., p. 9.
Corydal.

1. *F. officinalis* L. ✠
Common Fumitory. May-Sept. A.
Fields; waste places:

2. *F. capreolata* L.
Thickets: June-Sept. A.

3. *F. muralis* Sond.
Hedges, walls: May-Sept. A.

4. *F. Bastardi* Bor.
Hedges: Apr.-Sept. A.

5. *F. parviflora* Lam. R.
Corn-fields: June-Sept. A.

6. *F. Vaillantii* Lois. R.
Corn-fields: June-Sept. A.

7. *F. densiflora* DC.
Fields: June-Sept. A.

1. *C. claviculata* DC.
Climbing Corydal.
Bushy places: June-July. A.

2. *C. lutea* DC.
Yellow Corydal.
Walls: May-Sept. P.

*3. *C. solida* Sm. R.
Plantations; gardens: Apr.-May. P.



CRUCIFERÆ.

Almost all the Crucifers are very difficult to determine; it is necessary to gather specimens with the fruits well formed, almost if not quite ripe. Several of the plants are cultivated as vegetables, e.g. Cabbage, Radish, Turnip; others for their seeds which yield oil, e.g. Rape, or are used as condiments or in medicine, e.g. Mustard.

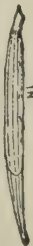
1. Fruit at least 4 times longer than broad, i.e. *siliquose*, pp. 10-11.
2. Fruit short, less than 4 times longer than broad, i.e. *siliculose*, pp. 12-13.

Fruit *jointed* R, joints *1-seeded*, valves 6-8 nerved R; petals veined or yellow; sepals darker at base; hairs stiff.



I. *Raphanus* L., p. 13.
Radish.

Beak of fruit *flattened* NI, A; valves of fruit several-nerved; sepals spreading.



IV. *Sinapis* L., p. 13.
Mustard.

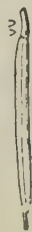
Fruit with seeds in one row (Fig. 1).

Flowers yellow.
Plant not having all the above characters.

Leaves deeply divided, at least at those at the base.
Seeds more or less oval B.
Seeds globular O;

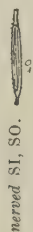
Plant *glabrous*; valves of fruit 1-nerved VU.

stems glaucous.



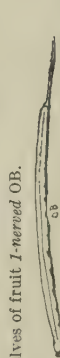
V. *Brassica* L., p. 14.
Brassica.

VII. *Barbarea* R. Br., p. 15.
Wintercress.



VIII. *Sisymbrium* L., p. 15.
Sisymbrium.

Valves of fruit 1-nerved OB.



IX. *Erucastrum*, p. 15.
Erucastrum.



X. *Cheiranthus* L., p. 15.
Wallflower.

Stigmas 2, separate CH, curving outwards; flower more than 1/2 in. across.

Leaves all entire or toothed.



XI. *Erysimum* L., p. 15.
Erysimum.

Stigmas 2, united or only slightly distinct E, not curving outwards; flower less than 1/2 in. across.

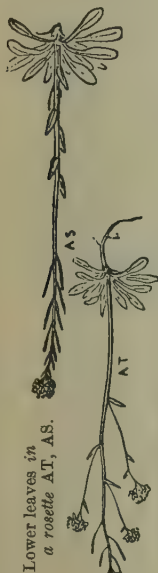
Median leaves compound or deeply divided; valves of fruit rolling spirally CA.



XII. *Cardamine* L., p. 16.
Bitter-cress.

XIII. *Dentaria* L., p. 16.
Dentaria.

XIV. *Matthiola* R. Br.,
p. 16.
Stock.
VI. *Arabis* L., p. 14.
Rock-cress.

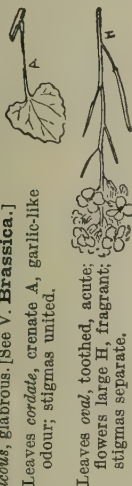


Fruit
compressed.

Leaves *glaucous*, glabrous. [See V. *Brassica*.]

Leaves *cordate*, crenate A, garlic-like
odour; stigmas united.

Leaves
not
glaucous
Fruit
not com-
pressed.



Leaves *oval*, toothed, acute;
flowers large H, fragrant;
stigmas separate.

Leaves *not divided*; fruits compressed, erect T.
[See VI. *Arabis*.]



XV. *Diplotaxis* DC. p. 16.
Diplotaxis.

XVI. *Nasturtium* R. Br.,
p. 17.
Water-cress.

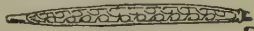
Fruit *compressed*, valves distinctly 1-nerved.

Leaves *deeply di-
vided*, at least
the lower ones.

Fruit *rounded*, valves nerveless O, S.



Fruit
with
seeds in
two rows
(Fig. 2).¹



1. The valves of the fruit when nearly ripe can be readily detached from the base upwards with a penknife; the rows of seeds can then be seen (Figs. 1 and 2, above). If a valve be examined by transparency, the nerves can be easily seen and counted.

Fruit flat, long IT, 1-seeded.

Flowers
yellow or
rarely
white.

Fruit
not
flat.

Fruit
many-
seeded.

Fruit pear-shaped
caul.

Fruit few-seeded, compressed C; flowers yellow or white.

Leaves amplexi-
caul. }
Fruit long R; }
leaves not am- }
plexicaul. }



Leaves cauline.
[See XVI. Nasturtium.]
Leaves radical.
[See XXIII. Draba.]



XXXIII. *Alyssum* L., p. 21.
Alyssum.

XXX. *Isatis* L., p. 20.
Wood.



XXXI. *Camelina* Cr., p. 20.
Camelina.

I. *Raphanus* L.¹ *Radish*.—(Fig. R, p. 10.)

Leaf-segments not touching each other; petals veined; fruit shorter than beak; root 1. R. *Raphanistrum* L.
Wild Radish. C.

Fruit
separating
into 1-seeded
segments.

Leaf-segments touching or overlapping; petals yellow; fruit longer than beak; root 2. R. *maritimus* Sm.
Sea Radish. Loc.

[Jointed Charlock; White Charlock.

Sea coast; June-Aug. B.

II. *Alliaria* Adams. *Alliaria*.—(Fig. A, p. 11.)

Fruit 7-8 times longer than pedicel; flowers white; 1-3 ft.

III. *Hesperis* L. *Hesperis*.—(Fig. H, p. 11.)

Flowers fragrant in the evening; calyx often purplish; 1½-3 ft.

Jack-by-the-Hedge; Sauce-alone.]

IV. *Sinapis* L. *Mustard*.—

Beak longer than fruit AL;



leaves all deeply divided; 1-3 ft.

Beak shorter than fruit
A, NI; upper leaves
entire or toothed.

Upper leaves sessile; seeds smooth;
1-2½ ft.
[Charlock.]



Leaves all stalked; seeds dull, marked
with little points; 1½-4 ft.



1. A. *officinalis* Andr. H
Garlic Mustard. C.

Hedges; woods; May-June. B.

*1. H. *matronalis* L.
Dame's Violet.

Hedges; woods; May-June. B.

1. S. *alba* L. H
White Mustard.

Corn-fields; waste places; May-July. A.

2. S. *arvensis* L. H
Wild Mustard. VC.

Corn-fields; waste places; May-Sept. A.

3. S. *nigra* L. H
Black Mustard.

Banks; hedges; June-Aug. A.

1. *Raphanus sativus* L. H [Cultivated Radish] is sometimes found as a garden escape.

V. *Brassica* L. *Brassica*. [Cabbage.]

Upper leaves sessile but *not auricled or amplexicaul*; sepals erect; 1-3 ft. [Sea Cabbage.]

not divided;
valves of
fruit
1-nerved.

Upper leaves sessile, *auricled and amplexicaul*; sepals spreading; 1-3 ft.

Upper leaves
deeply divided;
valves of fruit
3-nerved C.

Stem usually *prostrate*, glabrous; leaves mostly radical, glabrous; 6-24 in.

Stem erect, hairy below, leafy; leaves hairy; 1-3 ft.



VI. *Arabis* L. *Rock-cress*.—

Seeds in *two rows* (Fig. 2, p. 11); radical leaves toothed; cauline leaves entire, amplexicaul, glabrous; fruits erect; 1-3 ft. (Fig. T, p. 11). [Tower-Mustard.]

Flowers *yellowish-white*; fruits recurved, twisted; seeds winged; cauline leaves amplexicaul; hairy; 1-2 ft. [Tower-*cress*.]

Leaves entire or toothed.

Flowers white.

Fruits erect AS.

Cauline leaves $\frac{1}{2}$ amplexicaul AS, hispid; 8-18 in.

Cauline leaves sessile but *not amplexicaul*, ciliate; 4-6 in.

Cauline leaves amplexicaul, soft; 4-9 in.



Fruits spreading AT.
Cauline leaves sessile but *not amplexicaul*, hairy; leaves mostly radical in a rosette AT; 4-12 in.

[Tale-*cress*, Wall-*cress*.]

Fruits erect; leaves hispid; stem scarcely branched; flowers white or yellowish white; 4-8 in.

Leaves deeply cut or lobed.

Fruits spreading; leaves glabrous or slightly hispid; stem branched from base; flowers white tinged with purple; 3-8 in.

1. *B. oleracea* L. ¹ 
Wild Cabbage. Loc.
Sea cliffs; June-Aug. B.
2. *B. campestris* L. ² 
Field Brassica.
Fields; banks; June-Aug. A or B.
3. *B. monensis* Huds.
Isle of Man Brassica. R.
Sea coast; June-Aug. B. or P.
4. *B. Cheiranthus* Vill.
Wallflower-like Brassica R.
Stony places; June-Aug. B. or P.

1. *A. glabra* Bernh.
Glabrous Rock-cress. Loc.
Dry shady places; May-Aug. B.
2. *A. Turrita* L.
Tower Rock-cress. R.
Old walls; May-June. B.
3. *A. hirsuta* R. Br.
Hairy Rock-cress.
Banks; rocks; June-Aug. B.
4. *A. ciliata* R. Br.
Fringed Rock-cress. Loc.
Rocky places; July-Aug. B.
5. *A. alpina* L.
Alpine Rock-cress. VR.
Rocks; July-Aug. P.
6. *A. Thaliana* L.
Thale Rock-cress.
Walls; banks; Apr.-Sept. A.
7. *A. stricta* Huds.
Bristol Rock-cress. R.
Rocks; Apr.-May. P.
8. *A. petraea* Lam.
Northern Rock-cress. Loc.
Rocks; July-Aug. P.



Seeds in one row (Fig. 1, p. 10).

VII. *Barbarea* R. Br. *Winter-cress*.—(Fig. VU, p. 10.)

Stem more or less furrowed; lower leaves deeply divided, terminal lobe large; petals twice as long as sepals; fruits erect or slightly spreading BA; 1-2½ ft.

[Yellow Rocket.]



VIII. *Sisymbrium* L. *Sisymbrium*.—(Figs. SI, SO, p. 10.)
Fruits hairy SO, adpressed OF; upper leaves 3 lobed; 1-3 ft.

Fruits *not* hairy. Lobes of leaves narrow S, often more divided than in figure; fruit much longer than its stalk, curved towards peduncle; plant whitish-green; 8-30 in.



Lobes of leaves broad SI, few in upper leaves; fruit about twice as long as its stalk; plant glabrous, green; 1-2 ft.



IX. *Erucastrum*. *Erucastrum*.—(Fig. OB, p. 10.)
Median leaves not auricled PO, P; bracts present at base of lower flowers; flowers yellowish; 8-20 in.



X. *Cheiranthus* L. *Wallflower*.—(Fig. CH, p. 10.)

Stem shrubby; leaves lanceolate, entire, hairy; flowers yellow, fragrant; ½-2 ft.

XI. *Erysimum* L. *Erysimum*.—(Fig. E, p. 10.)

Leaves entire, broad, heart-shaped at base; fruit 8-10 times longer than its stalk OR; 8-18 in.



Leaves toothed, lanceolate; fruit about twice as long as its stalk CS; 1-2 ft.



1. *B. vulgaris* R. Br. *Winter-cress*.
Damp places; Apr.-Aug. B, or P.

1. *S. officinale* Scop. *Hedge Mustard*. C.
Waste places; June-July. A.

2. *S. Sophia* L. *Flaxweed*. Loc.
Waste places; June-Aug. A.

3. *S. Irio* L. *London Rocket*. R.
Waste places; June-Aug. A.

*1. *E. Pollichii* Spenn. *Pollich's Erucastrum*. R.
Waste places; June-Aug. A.

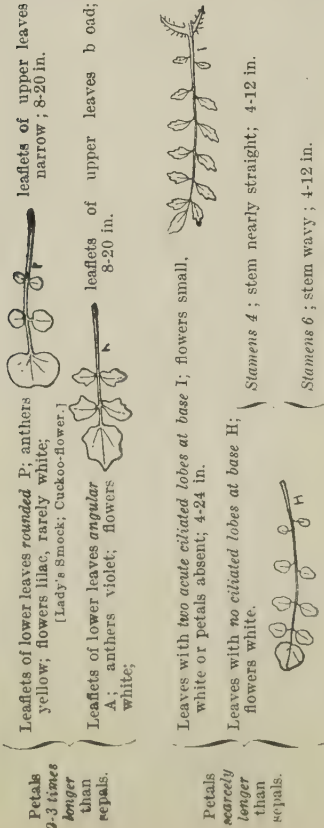
* 1. *C. Cheiri* L. *Wallflower*.
Old walls; rocks; Apr.-May. P.

* 1. *E. orientale* R. Br. *Hare's-ear Treacle Mustard*. R.
Dry fields; May-Aug. A.

2. *E. Cheiranthoides* *Treacle Mustard*.
Damp ground; June-Sept. A.

1. Cultivated forms include the Cabbage, Cauliflower, Brussels Sprouts, Kale, etc.—2. *B. Napus* L. [Rape Cabbage]: leaves glaucous; var. *oleifera* [Colza, Cole-seed]: root slender; *B. Rutabaga* L. [Swede Turnip]: leaves glaucous, root swollen; *B. Rapa* L. [Wild Turnip]: leaves hairy; var. *oleifera* [Rape-seed]: root slender; var. *esculenta* [Turnip], root swollen. 3. Var. *arcuata* Robb.: fruits spreading; var. *strida* Andr.: petals 1½ times as long as sepals; var. *intermedia* Bor.: leaves much divided; var. *præcox* R. Br. [American Cress]: petals 3 times as long as sepals, leaf-segments narrow.

XX. Cardamine L. Bitter-cress.—(Fig. CA, p. 10.)

- Petals 2-3 times longer than sepals. Leaflets of lower leaves rounded P; anthers yellow; flowers lilac, rarely white; [Lady's Smock; Cuckoo-flower.]
- Leaflets of lower leaves angular A; anthers violet; flowers white;
- Leaves with two acute ciliated lobes at base I; flowers small, white or petals absent; 4-24 in.
- Leaves with no ciliated lobes at base H; flowers white.
- Petals scarcely longer than sepals.
- leaflets of upper leaves narrow; 8-20 in.
- leaflets of upper leaves broad; 8-20 in.
- 
- leaflets of upper leaves narrow; 8-20 in.
- leaflets of upper leaves broad; 8-20 in.

XIII. Dentaria L. Dentaria.—

Upper leaves simple, entire, often bearing bulbils in their axils D; petals white or lilac, large; 1-2 ft.

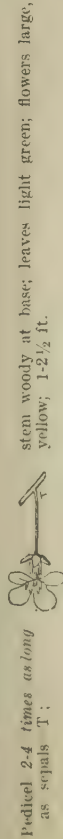
XIV. Matthiola R. Br. Stock.—

Stem shrubby; lower leaves always entire; fruits not bearing glandular hairs; flowers purple; 1-2½ ft. [Gilliflower.]

Stem herbaceous; lower leaves sinuate; fruits covered with glandular hairs, flowers purple, fragrant at night; 1-2 ft.

XV. Diplotaxis DC. Diplotaxis.—

Pedicel 2-4 times as long as sepals T; stem woody at base; leaves light green; flowers large, yellow; 1-2½ ft.



1. **C. pratensis L.**
Meadow Bitter-cress. VC.
Damp meadows; Apr.-May. P.

2. **C. amara L.**
Large Bitter-cress.
Watery places; Apr.-June. P.

3. **C. impatiens L.**
Narrow-leaved Bitter-cress.
LOC.
Moist shady places; June-Aug. A. or B.

4. **C. hirsuta L.**
Hairy Bitter-cress.
Damp places; Apr.-Aug. A.

5. **C. flexuosa With.**
Shady places; Apr.-Sept. B. or P.

1. **D. bulbifera L.**
Cornwort. R.
Woods; Apr.-May. P.

1. **M. incana R. Br.**
Shrubby Sea Stock. Loc.
Sea cliffs; May-July. P.

2. **M. sinuata R. Br.**
Sea Stock. Loc.
Sea cliffs; June-Aug. P.

1. **D. tenuifolia DC.**
Narrow-leaved Wall Rocket.
Walls; banks; June-Sept. P.



Pedical twice as long as sepals M;

stem herbaceous; leaves green; flowers smaller, yellow, becoming reddish; 4-16 in.

2. *D. muralis* DC.
Wall Rocket.
Waste places: June-Sept. A.
or B.

XVI. *Nasturtium* R. Br. *Water-cress*.—

Fruit at least 4 times as long as broad.

Flowers white; leaflets oval or rounded OF; fruit about twice as long as its stalk O; $\frac{1}{2}$ -3 ft.

Flowers yellow; leaflets narrow; fruit often curved, longer than its stalk S; 8-20 in.



Fruit less than 4 times as long as broad; flowers yellow.

Fruit about as long as its stalk R;

sepals as long as petals; median leaves deeply lobed; 4-20 in.

Fruit about 4 times shorter than its stalk AM; sepals half as long as petals; median leaves entire or deeply toothed A; $1\frac{1}{2}$ -3 ft.



3. *N. palustre* DC.
Marsh Water-cress.
Wet places: June-Oct. P.

4. *N. amphibium* R. Br.
Great Water-cress.
Watery places: June-July. P.

1. *N. officinale* R. Br. $\frac{1}{2}$
Common Water-cress. VC.
Brooks: June-Sept. P.
2. *N. sylvestre* R. Br.
Creeping Water-cress.
Wet places: June-Sept. P.

XVII. *Teesdalia* R. Br. *Teesdalia*.—Radical leaves in a rosette, more or less deeply divided; upper leaves entire; petals white, unequal; 2-6 in.

1. *T. nudicaulis* R. Br.
Common Teesdalia.
Sandy and gravelly places: Apr.-June. A.

XVIII. *Iberis* L. *Candytuft*.—(Figs. I, A, p. 12.) Leaves 2-4 toothed near apex; flowers white or purplish; 4-12 in.

1. *I. amara* L.
Bitter Candytuft. Loc.
Corn-fields: June-Sept. A.

XIX. *Capsella* Mönch. *Shepherd's Purse*.—(Fig. BP, p. 12.) Radical leaves in a rosette, usually divided; flowers small, white; 4-24 in.

1. *C. Bursa-pastoris* Mönch
Shepherd's Purse. VC.
Cultivated and waste places: Jan.-Dec. A.

XX. *Thlaspi* L. *Penny-cress*.—

Radical leaves in a *rosette* MO, entire or slightly toothed;



anthers purplish; style longer than notch AL; flowers white; 4-12 in.

Radical leaves not in a *rosette*, often toothed.

Auricles of leaf *acute* AR; seeds striated, 5-6 in each chamber; flowers white; 8-16 in. [Mithridate Mustard.]

Auricles of leaf *obtus* PE; seeds smooth, 2-4 in each chamber; flowers white; 4-8 in.

XXI. *Lepidium* L. *Cress*.—

Fruit pear-shaped, not notched or winged D;



seeds brown; 1-2 ft.

Median leaves amplexicaul, auricled C.



Fruit oval, notched, slightly winged L; seeds black.

Stem branched at top; anthers yellow; style short L; 6-12 in.



Stem branched at base; anthers violet; style longer than notch; 6-12 in.

Leaves undivided, toothed or entire, somewhat thick; fruit rounded I, downy; 1½-4 ft.



Leaves not amplexicaul.

Lower leaves much divided, upper leaves entire; fruit notched, more or less winged R.

Fruit oval R; petals usually absent; stamens 2; 4-12 in.



Fruit roundish; stamens 6; taste pungent; 6-18 in.

XXII. *Hutchinsia* R. Br. *Hutchinsia*. — Leaves not amplexicaul, deeply divided, leaflets parallel; flowers very small, petals about as large as sepals; fruit oval H; plant glabrous, delicate; 1-4 in. [Rock-cress.]



1. **T. alpestre**. L.
Alpine Penny-cress. Loc.
Mountain pastures: May-Aug.
B. or P.

2. **T. arvense** L.

Field Penny-cress.
Cultivated and waste places:
May-Aug. A.

3. **T. perfoliatum** L.
Perfoliate Penny-cress. Loc.
Pastures; stony places: Apr.-
May. A.

*1. **L. Draba** L.
Hoary Cress. R.
Walls; waste places: May-
July. P.

2. **L. campestre** R. Br.
Mithridate Peppercress.
Fields; waste places: June-
Aug. B.

3. **L. Smithii** Hook.
Smith's Cress.
Banks: June-Aug. P.

4. **L. latifolium** L.
Dittander.
Salt marshes: June-Aug. P.

5. **L. ruderale** L.
Narrow-leaved Cress. R.
Waste places: May-Sept. A.

*6. **L. sativum** L. ✠
Garden Cress.
Escape; cultivated: June-July.
A.

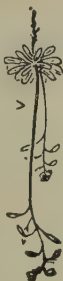
1. **H. petraea** R. Br.
Rock Hutchinsia. Loc.
Walls; rocks: Mar.-May. A.

XXIII. *Draba* L. *Draba*.—

Flowers *yellow, large*; leaves all radical DA, rigid, ciliate; fruit terminated by long persistent style; 2-6 in.



- | | | | |
|-----------------------------|---|---------------------|--|
| Flowers
white,
small. | Petals
entire or
slightly
notched. | Plant
perennial. | Leaves all radical, or cauline leaves 1-2; fruits <i>straight</i> ; 1-2 in. |
| | | | Leaves not all radical, cauline leaves several; fruits <i>twisted</i> ; 4-12 in. |
| | Plant <i>annual</i> ; cauline leaves many, amplexicaul; flowers very small; fruit and its stalk spreading horizontally MU; 4-12 in. | | |
| | Petals <i>deeply 2-lobed</i> , apparently 8 but really 4; flowers very small; leaves all radical V; 1-6 in. | | |



XXIV. *Subularia* L. *Auwort*.—(Fig. 8, p. 12.) Plant rooted, usually submerged; leaves all radical, long, narrow, nearly cylindrical; 1-3 in.

XXV. *Lunaria* L. *Lunaria*.—Fruit thin, circular, large, terminated by the persistent style; 2-4 ft.

XXVI. *Cochlearia* L. *Cochlearia*.—

Upper leaves *triangular or oval*, 4-6 toothed; radical leaves cordate; fruit narrowed at both ends; 4-12 in.

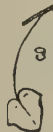
Upper leaves *cordate*, upper ones sinuate; fruit rounded, style short; 4-10 in.

Radical leaves *not cordate*, upper ones entire or toothed; fruit oval, style long, about 1 mm.; 10-18 in.

Upper leaves *stalked*, triangular CO; radical leaves cordate; fruit oval (Fig. CA, p. 12); 1-12 in.

Upper leaves *not thick and pungent*; valve of fruit distinctly 1-nerved; radical leaves fleshy, 4-tufted; 2-6 in.

Upper leaves *thick and pungent*; valve of fruit not nerved; radical leaves large, stalks long; sessile. 2-3 ft.



1. *D. aizoides* L.
Yellow Draba. Loc.

Rocks; walls: Mar.-May. P.

2. *D. rupestris* R. Br.
Rock Draba. VR.

Rocks: June-July. P.

3. *D. incana* L.

Hoary Draba. Loc. P.

Rocks; dunes: June-July. P.

4. *D. muralis* L.

Wall Draba. Loc.

Rocks; walls: Apr.-May. A.

5. *D. verna* L.

Whillow-grass. VC.

Walls; banks: Mar.-May. A.

1. *S. aquatica* L.

Auwort. Loc.

Margins of ponds and lakes: June-Aug. P.

1. *L. biennis* Moench

Honesty.

Gardens; escape: Apr.-May. B.

1. *C. alpina* Wats.

Alpine Scoury-grass. Loc.

Mountains: June-Aug. P.

2. *C. officinalis* L.

Common Scoury-grass.

Muddy coasts: May-Aug. P.

3. *C. anglica* L.

English Scoury-grass.

Muddy coasts: May-June. A.

4. *C. danica* L.

Stalked Scoury-grass.

Sea coasts: Apr.-June. B.

5. *C. groenlandica* L.

Northern Scoury-grass. Loc.

Sea coasts: June-Aug. B?

*6. *C. Armoracia* L. ✠

Horse-radish.

Waste places: May-July. P.

XVII. *Cakile* Mill. *Cakile*.—(Figs. CK, CM, p. 12.) Seeds 2, one in each joint, the lower seed seldom ripening; leaves fleshy, divided; flowers lilac; branches many, straggling 6-18 in.

XXVIII. *Crambe* L. *Crambe*.—(Fig. CR, p. 12.) Seed 1, in upper joint; lower joint abortive and seedless; leaves thick, glaucous, large, wavy, 1-2 ft.

XXIX. *Senebiera* DC. *Senebiera*.—



Plant *glabrous*, prostrate; fruit *not notched*, longer than its stalk CO, deeply wrinkled; 4-8 in.

Plant *more or less hairy*, prostrate; fruit *notched*, shorter than its stalk D slightly wrinkled; 6-16 in.



XXX. *Isatis* L. *Wood*.—(Fig. IT, p. 13.) Lower leaves usually hairy; upper leaves glabrous, amplexicaul, auricled; flowers yellow; fruits pendulous; 1-4 ft.

XXXI. *Camelina* Cr. *Camelina*.—(Fig. CS, p. 13.) Radical leaves stalked; upper leaves amplexicaul, auricled; flowers pale yellow; fruit finely veined, partition broad; 1-3 ft.

XXXII. *Berteroa* DC. *Berteroa*.—

Flowers white; leaves entire, hairy; long stamens flattened at base; short stamens 1-toothed; fruit flattened at margin I; plant greyish-green; 8-18 in.



1. *C. maritima* Scop.
Sea Rocket.
Sandy coasts: July-Sept. A.

1. *S. maritima* L.
Sea Kale. R.
Rocky and sandy coasts; shingle: June-Aug. P.

1. *S. Coronopus* Poir. ✕
Swine Cress.
Waste places: June-Oct. A.

2. *S. didyma* Pers.
Wart Cress. LOC.
Waste places near sea: June-Sept. A.

1. *I. tinctoria* L. ✕
Dyer's Wood.
Banks; cliffs: July-Sept. B.

1. *C. sativa* Cr. ✕
Gold of Pleasure. R.
Fields of flax and corn: June-July. A.

*1. *B. incana* DC.
White Berteroa.
Dry ground: June-Oct. A. or B.

XXXIII. *Alyssum* L. *Alyssum*.—

Petals *yellow*, becoming white, inconspicuous; sepals persistent; filaments of short stamens with appendages at base; plant ashy-grey; 2-6 in.

Petals *white*, spreading, conspicuous; sepals deciduous; filaments without appendages at base; flowers fragrant; 4-12 in.

- *1. *A. calycinum* L.
Small Alyssum.
Dry ground: May-June. A.
- *2. *A. maritimum* Lam.
Sweet Alyssum.
Waste places; gardens: June-Sept. P.

CISTACEÆ.

The flowers of the most common species are very similar. The plants often contain a resinous essence which gives them a peculiar smell. The order includes the Gum-Cistuses

I. *Helianthemum* Mill.

Rock-rose.—Leaves mostly opposite, with or without stipules; petals spreading; stamens numerous H.



Plant *herbaceous*; stem erect, slender; stipules of upper leaves *very long*; petals yellow, usually spotted brown at base G; style minute; fruits smooth, erect; 4-16 in.



Plant *shrubby*; stems prostrate, spreading.

Stipules *only slightly longer than petiole*; style longer than ovary.

Flowers *white*; sepals hairy over whole surface P; leaves hoary on both surfaces, margins rolled; 4-16 in.



Flowers *yellow*; sepals hairy only along nerves V; leaves hoary below, green above; 4-16 in.



Stipules *absent*; leaves hoary on both surfaces; flowers small, yellow; 6-8 in.

1. *H. guttatum* Mill.
Spotted Rock-rose. Loc.
Heaths: May-Aug. A.

2. *H. polifolium* Mill.
White Rock-rose. Loc.
Downs near sea: May-July. P.

3. *H. Chamæcistus* Mill.
Common Rock-rose.
Chalky pastures: July-Sept. P.

4. *H. canum* Dun.
Hoary Rock-rose. Loc.
Chalky heaths: May-July. P.

VIOLACEÆ.

The species are often very difficult to determine. On contact with alkalies, the blue colouring matter of the petals has the peculiar property of becoming green.

I. *Viola* L. *Violet*.—

The 4 upper petals
erect I.
[Pansy]



Plant with long, underground stems; stipule-lobes narrow L;
flowers yellow; 4-16 in. [Wild Pansy.]



1. *V. lutea* Huds. R.
Mountain pastures; sand-
dunes: June-Aug. P.

Plant with no long underground stems; middle lobes of stipules large and
wide; flowers yellow, white or purple; 4-16 in.

Wild Pansy.

2. *V. tricolor* L.
Heartsease. C.
Hilly pastures; cultivated
ground: Apr.-Sept. A.

Only the
two
upper
petals
erect H.



Ovary
and fruit
smooth;
fruit
triangular.

Leaves all at the
base VP; flowers
small, blue with
purple streaks;



stigma flat, oblique; stipules
oval, pointed, teeth glan-
dular; plant
glabrous;
2-5 in.

3. *V. palustris* L.
Marsh Violet.
Marshes; bogs: May-July. P.

Flowering
stem leafy;
flowers
fairly
large,
violet,
rarely
white.

Cilia as long as breadth
of stipule S; flower-
ing stems springing
from below rosette
of leaves, i.e. axillary;
Cilia shorter than breadth
of stipule C; flowering
stems terminal and axillary;



fruit often
acute S;
4-9 in.
[Dog Violet.]



4. *V. sylvestris* Lam.¹
Wood Violet. C.
Shady places: Apr.-June. P.



fruit often
blunt CA;



5. *V. canina* L.
Dog Violet.
Shady places; heaths: Apr.-
June. P.

- Flowers *sweet smelling*; only lower petal notched O;
- Flowers *odourless*; all 5 petals usually notched H ;
- Ovary and fruit hairy; fruit globular.
- branches creeping, rooted; 4-8 in.
- no creeping branches; 4-8 in.



6. *V. odorata* L. $\frac{H}{H}$
Sweet Violet.
Banks: Mar.-Apr. P

7. *V. hirta* L.
Hairy Violet.
Chalky pastures: Apr.-June. P.

RESEDACEÆ.

The members of this N.O. have very similar inflorescences. The roots of several, in particular *R. luteola*, are the source of a yellow dye.

1. *Reseda luteola* L. *Mignonette*.—

Sepals 4, R.L.;



flowers pale yellow; pedicels short LL; leaves long, entire; 2-3 ft.
[Weld; Yellow Weed; Dyer's Rocket.]



1. *R. luteola* L. $\frac{H}{H}$
Dyer's Weed.
Waste places: July-Sept. B.

Sepals 6, L.A.; sometimes 5.



Flowers *yellow*; pedicels fairly long RL; leaves divided L; 1-2 ft.
[Wild Mignonette.]



2. *R. lutea* L.
Cut-leaved Mignonette.
Waste places: June-Aug. B.

Flowers *white*; pedicels short; leaves divided, segments entire; 1-2 ft.
[Wild Mignonette.]

*3. *R. alba* L.
White Mignonette. R.
Waste sandy places; escape; July-Aug. B.

1. Var. *diviniana* Echb.: prolongations of sepals angular, persistent, stipules short; var. *Reichenbachiana* Jord.: prolongations of sepals rounded, deciduous,

POLYGALACEÆ.

The various species are very similar to one another; to determine them accurately, it is necessary to have plants with well-formed fruits in the lower part of the inflorescence. The two large sepals are known as the *calyx wings*.

1. *Polygala L. Milkwort.*—

Calyx wings a shorter
than fruit *c.*
(Fig. PA.)

Plant with a *bitter flavour*; leaves alternate; flowers pale, blue, white, or pink; 1-3 in.



1. *P. amara* L. \times R.
Rocky places: Apr.-July. P.

Plant with *no bitter flavour*; leaves alternate; flowers usually blue.

2. *P. oxypetala* Rehb. R.
Sandy and rocky places: June-Aug. P.

Some of leaves *opposite* PD; flowers pale; 1-10 in.



3. *P. serpyllacea* Weihe.
Heath Milkwort.
Heaths: June-Sept. P.

Lower leaves *smaller* than upper ones PV; calyx wings with secondary veins uniting in two arches at apex; flowers white, lilac, pink or blue; 1-10 in.

Calyx wings a longer
than fruit *c.* (Figs.
D, V, AM.)

Leaves *not opposite.*



4. *P. vulgaris* L.
Common Milkwort. C.
Heaths; pastures; hedges:
June-Sept. P.

Lower leaves *larger* than upper ones; veins *not* uniting in two arches at apex of wing; flowers blue, seldom pink or white; 1-6 in.

5. *P. calcarea* F. Sch.
Chalk downs: May-July. P.




DROSERACEÆ.

All the species have the upper surfaces of their leaves covered with club-shaped glandular hairs secreting a viscid fluid and sensitive to contact. The leaves attract and retain small insects; the plants are considered by some botanists to be carnivorous.

I. *Drosera* L. *Sundew*.—

Leaves *prostrate*, lamina as broad as long DR; flowers white; fruit longer than calyx; stigmas rounded; 3-6 in.



1. *D. rotundifolia* L. 
Common Sundew.
Bogs: July-Aug. P.

Flowering stem *much longer* than the leaves, springing from *centre* of rosette DL; stigmas clubbed; flowers whitish or pinkish; 4-8 in.



2. *D. anglica* Huds.
Long-leaved Sundew. R.
Bogs: July-Aug. P.

Flowering stem *not much longer* than leaves, springing from *side* of rosette DI; stigmas flat; flowers white; 1½-4 in.



3. *D. longifolia* L.
Oblong Sundew. R.
Bogs: July-Aug. P

Leaves *erect*;
lamina
elongated DL, DI.

FRANKENIACEÆ.

I. *Frankenia* L. *Frankenia*.—

Stem prostrate, spreading, wiry; leaves in opposite clusters, small, glabrous, margins rolled; flowers few, pink, in terminal or axillary spikes.

1. *F. lævis* L.
Sea Heath. Loc.
Salt marshes: June-Sept. P.

1. *D. obovata* M. and K. is considered a hybrid of *D. rotundifolia* L. and *D. anglica* Huds.—Its characters are intermediate and its seeds aborted; VR.

CARYOPHYLLACEÆ. The species of some genera, e.g. *Sagina*, *Cerastium*, can often be determined only when bearing ripe fruit. Several members of the order are cultivated as ornamental plants, e.g. *Carnation*, *Gypsophylla*.

Calyx tube with bracts closely embracing its base (Figs. on p. 28); styles 2.

Stamens united to form a tube.
Sub-Order Sileneæ.

No bracts
at base
of calyx
tube.

Upper leaves
stalked C;



fruit
fleshy CC.



Styles 2; leaves broad, oval; petiole short, broad.

I. **Dianthus** L., p. 28.
Pink.

II. **Saponaria** L., p. 28.
Saponaria.

III. **Cucubalus** L., p. 28.
Cucubalus.

IV. **Silene** L., p. 29.
Silene.

Upper leaves sessile; fruit dry.

V. **Lychnis** L., p. 30.
Lychnis.

Styles 5 or 0; petals usually with a small double or notched scale at base; leaves sessile



Styles 5 AR;

leaves clustered SA;



fruit 5-valved.

VI. **Spergula** L., p. 30.
Spurrey.

Leaves with
membranous
stipules
SA, SR.

Styles 5 R;
fruit 3-valved.

Leaves opposite SR, cylindrical.



Leaves apparently 4 in a whorl, flat.



VII. **Spergularia** Presl.,
p. 30.
Sand Spurrey.
VIII. **Polycarpon** Loefl.,
p. 30.
Polycarp.

Sepals free or united only at the base.
Sub-Order Allisneece.

Leaves without stipules.

Styles 4 or 5.

Styles 2 or 3.

Upper leaves slightly heart-shaped at base M;



petals cleft to their base; fruit 5-valved, 2-toothed.

Fruit 4 or 5 valved SP;

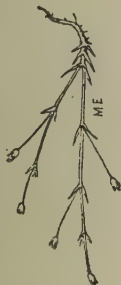


leaves narrow and united at base.

Leaves not heart-shaped at base.

Fruit opening by 8 or 10 teeth; leaves oval or narrow.

Petals entire or slightly notched; plant glabrous, glaucous ME.



Petals cleft more or less deeply; plant more or less hairy

Flowers almost umbellate HU; petals irregularly toothed H;



fruit 6-toothed, then 6-valved.



XIV. *Holosteum* L., p. 33.
Holosteum.

Petals cleft more or less deeply; fruit 6-valved.

Flowers not umbellate.

Petals entire or only slightly notched.

Fruit 3- or 6-valved; leaves not fleshy.

Fruit 3-valved PE; leaves thick, fleshy.



XV. *Arenaria* L., p. 33.
Sandwort.

XIII. *Stellaria* L., p. 32.
Stitchwort.

IX. *Malachium* Fr., p. 31.
Malachium.

XII. *Sagina* L., p. 32.
Pearlwort.

XI. *Mœnchia* Ehrh., p. 31.
Mœnchia.

X. *Cerastium* L., p. 31.
Cerast.

XVI. *Honkenya* Ehrh., p. 33.
Honkenya.

I. *Dianthus* L. *Pink*.

Petals *deeply divided*, segments narrow and many; flowers solitary; bracts 4, $\frac{1}{4}$ length of calyx tube; calyx smooth; petals pale pink or white, fragrant; 6-12 in.

Flowers
clustered,
bracts
longer
than calyx
tube P, A.

Bracts *oval*, *obtusate* P; calyx smooth;



petals pink; 4-16 in.

Bracts *pointed*; calyx hispid;



petals pink with white spots;
1-1½ ft.

Flowers
solitary;
bracts
shorter
than calyx
tube CÆ,
CS, D.

Bracts
rounded,
apical,
point short
CS, CÆ.

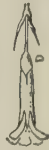
(Petals *hispid* on inner surface, irregularly
toothed CÆ, rose; fragrant; 4-8 in.



Petals *smooth*, teeth rounded CS, rose; fragrant; 8-20 in.



Bracts *oval*, *apical point long* D; calyx hairy; petals rose, darker
triangular patch at base of limb; 6-12 in.



*1. *D. plumarius* L.
Pheasant's-eye Pink. R.
Old walls: June-July. P.

2. *D. prolifer* L. VR.
Chiding Pink.
Dry, hilly pastures: June-Aug.

3. *D. Armeria* L.
Deptford Pink. R.
Dry pastures: July-Aug. A.

4. *D. cæsius* L.
Cheddar Pink. R.
Chalky pastures: June-July. P.

*5. *D. Caryophyllus* L.
Glove Pink. R.
Old walls: July-Aug. P.

6. *D. deltoides* L.
Maiden Pink. R.
Hilly pastures: June-Sept. P.

II. *Saponaria* L. *Saponaria*.—

Calyx *cylindrical*, *ribbed*.
very long S;



leaves shortly stalked; petals entire, 2 scales at base of limb,
pale rose; 1-2 ft.

Calyx tube with 5-*ringed*
angles SV;



leaves sessile, connate; petals rose; 8-24 in.

*1. *S. officinalis* L. ✠
Soapwort.
Waste places: Aug.-Sept. P.

*2. *S. Vaccaria* L. ✠
Cow Saponaria. R.
Corn-fields; an escape: July-
Sept. A.

III. *Cucubalus* L. *Cucubalus*.—(Figs. C and CC, p. 26.)

Calyx bell-shaped; petals entire, 2 scales on limb. white or pale pink; plant glabrous; 12-16 in.

*1. *C. baccifer* L. VR.
Shady waste places: June-
Aug. P.

IV. *Silene* L. *Silene*.—

Petals *entire*; calyx smooth; flowers small, apparently whorled, often dioecious, greenish white; 4-18 in.

Petals *entire* or *finely toothed*;
calyx very hairy G;



filaments hispid; plant viscid;
yellowish white or pink; 8-16 in.

1. **S. Otites** Sm.
Spanish Silene. R.
Dry places: June-July. P.

2. **S. anglica** L.
English Catchfly.
Dry places: June-Sept. A.

Calyx
either
contracted
above CO,
or *not*
inflated N,
NF.

Petals
divided in two
more or less
deeply
SN, CO, NF.



Petals *cleft* to base of limb SN; flowers drooping N;
upper part of stem viscid;
flowers white or pink;
1-2 ft.

Flowers erect CO; calyx conical,
contracted above, 30-nerved; petals
pink; 4-16 in.
Stems short, tufted, moss-like; calyx
tubular, 10-nerved; flowers small, nume-
rous, purple or white; 2-3 in.

[Moss Campion.]



Petals *cleft* to mid-
dle of limb NF;



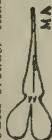
calyx 10-nerved, hispid; flowers
pinkish-yellow; 4-16 in.

Stems erect; calyx mouth *narrower*
than base SI; petals usually with-
out scales I; 1-3 ft. [White Bottle.]



Petals
deeply 2-cleft
I, MA;
flowers
white.

Stems *prostrate*, spreading; calyx mouth *broader* than
base; petals with 2 scales at
base of limb MA; 6-12 in.



Corn-fields: July-Sept. A.

7. **S. inflata** Sm.
Bladder Campion.
Roadsides: June-Aug. P.

8. **S. maritima** With.
Sea Campion.
Shingly beaches; mountains;
June-Aug. P.

Petals *notched*, 2 scales at base of limb, rose; calyx about 4 times longer than broad; 6-18 in.

*9. **S. Armeria** L. R.
Shady waste places: July-
Sept. A.

V. *Lychnis* L. *Lychnis*.—

Sepals longer than petals GI; petals without scales;



plant covered with long white hairs; leaves linear, pointed; flowers large, solitary, reddish purple; 1-3 ft.

Petals 4-cleft with 2 scales FC; stem hairy;



1. *L. Githago* Scop. *Corn Cockle*.
Corn-fields: July-Aug. A.

2. *L. Flos-cuculi* L. *Ragged Robin*. C.
Damp places: May-June. P

3. *L. alpina* L. *Alpine Lychnis*. VR.
Mountains: June-July. P.

4. *L. Viscaria* L. *Viscid Lychnis*. R.
Dry hilly pastures, and rocks: June-July. P.

5. *L. alba* Mill. *White Campion*. C.
Fields; hedges: June-Sept. P.

6. *L. dioica* L. *Red Campion*. C.
Shady places: May-Aug. P.

Leaf-blade usually smooth.

Sepals shorter than petals; petals with scales.

Petals not 4-cleft.

Petals deeply 2-cleft, scales very small; stem smooth; flowers small, rose, in heads; 3-8 in.

Petals almost entire, scales long V; upper nodes of stem viscid;



Flowers white, opening and scented in evening; petal scales oval, toothed; fruit with erect teeth; 1-2 ft.



Flowers rose; petal scales acute; fruit with recurved teeth; 1-2 ft.

VI. *Spergula* L. *Spurrey*.—

Leaf revolute, forming a furrow on under surface AV.



Leaves scarcely viscid; seeds with club-shaped papilla, margin narrowly winged; stamens 10; 4-16 in.

Leaves very viscid; seeds black with minute points, margin narrow; stamens 10; 4-16 in. [Corn Spurrey.]

VII. *Spergularia* Presl. *Sandspurrey*.—

Stamens less than 10, usually 5.

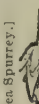
Fruit about as long as calyx RU; seeds papillate, with thickened margin; leaves linear, flat, pointed; 2-8 in.



Fruit slightly longer than calyx; seeds smooth, with winged or thickened margin; leaves fleshy; 4-12 in. [Sea Spurrey.]

Stamens 10.

Fruit about as long as calyx; leaves hairy; seeds not winged; 4-12 in. [Sea Spurrey.]



Fruit about twice as long as calyx; leaves fleshy; seeds with broad wing; 4-15 in. [Sea Spurrey.]

VIII. *POLYCARPON* Loefl. *Poly carp*.—

Stems branched, spreading, prostrate; leaves opposite, lower ones apparently in whorls of 4; flowers very small, numerous; stamens usually 3; 2-8 in. [Four-leaved Alsead.]

1. *P. tetraphyllum* L. *Four-leaved Polycarp*. VR.
Sandy places: May-July. A

4. *S. media* Presl. *Muddy salt marshes*: June-Sept. P.

3. *S. rupestris* Lebel. *Sea coast*: June-Sept. P.

2. *S. salina* Presl. *Sea coast*: June-Sept. A.

1. *S. rubra* Pers. *Common Sandspurrey*. C.
Dry waste places: June-Aug. A.

1. *S. arvensis* L. *Corn Spurrey*. C.
Corn-fields: June-Aug. A.

2. *S. sativa* Benth. *Corn-fields*: June-Aug. A.

IX. *Malachium* Fr. *Malachium*.—

Sepals obtuse, shorter than petals; leaves glabrous; plant delicate, drooping rapidly; flowers white; 1-3 ft.

A. *Cerastium* L. *Cerast.* [Mouse-ear Chickweed.]—The species of this genus are difficult to determine.

Petals white, 2-3 times longer than calyx A V; peduncles much longer than calyx and bracts; plant a perennial.

Bracts slightly membranous at margin.

Leaves lanceolate, hairy; flowers several on a peduncle; capsule oblique; 6-10 in.

Leaves ovate, woolly; flowers 1-3 on peduncle; styles 5; capsule nearly straight; 3-6 in.



Bracts not membranous; leaves oblong; peduncle 1-3 flowered; styles 3; stems with hairy line down one side; 3-6 in.

Peduncles shorter or no longer than calyx and bracts;



bracts green, herbaceous; sepals membranous at margin; leaves ovate, hispid; petals hairy at base; 4-16 in.

Petals white, shorter or little longer than calyx; plant usually an annual.

Sepals and bracts toothed near apex S;



bracts wholly or half membranous; stamens usually 5; plant with glandular hairs; 4-10 in.

Peduncles much longer than calyx and bracts.

Sepals and bracts partly membranous.

Sepals and bracts entire at apex; margin of bracts membranous VU, P.

Bracts not hairy at apex VU;



plant with hairs seldom glandular; 4-20 in.



Bracts hairy at apex P; plant with glandular hairs; 1-10 in.

Sepals and bracts 1-10 in.

entirely herbaceous; sepals, petals and stamens usually 4;

1. *M. aquaticum* Fr. *Great Chickweed.*
Wet places; July-Aug. P.

1. *C. arvense* L. *Field Cerast.*
Dry, hilly places; Apr.-Aug. P.

2. *C. alpinum* L. *Alpine Cerast.* Loc.
Mountains, moist places; June-Aug. P.

3. *C. Cerastoides* Britton. *Starwort Cerast.*
Mountains, moist places; July-Aug. P.

4. *C. viscosum* L. *Broad-leaved Cerast.*
Fields; banks; Apr.-Sept. A.

5. *C. semidecandrum* L. *Small Cerast.*
Fields; roadsides; Apr.-June. A.

6. *C. vulgatum* L. *Common Cerast.* C.
Fields; roadsides; Apr.-Sept. A. or B.

7. *C. pumilum* (urt. R. *Dry chalky situations; Apr.-June. A.*

8. *C. tetrandrum* Curt. *Sea Cerast.*
Walls and dunes near sea; May-July. A.

1. *M. erecta* Sm. *Upright Mœchia.*
Waste dry or moist places; Apr.-May. A.

XI. *Mœchia* Ehrh. *Mœchia*.—(Fig. ME, p. 27.)

Plant glabrous, glaucous; leaves acute at apex; sepals, petals, stamens 4, seldom 5; petals white, 1-2 times longer than calyx; fruit not longer than calyx; bracts with membranous margins; 2-4 in.

[Erect Pearlwort.]

XII. *Sagina L. Pearlwort.*—

Pedicels *reflexed* after flowering PU; petals $\frac{1}{2}$ length of sepals, sometimes absent; stems prostrate, spreading; plant glabrous, 1-3 in.

Sepals, petals, styles 4; petals white.

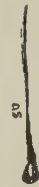


Pedicels *not reflexed* after flowering AP; petals minute or absent; stems more or less erect.

Sepals *not spreading*. Plant more or less glandular-pubescent; outer sepals *adpressed* to ripe fruit, apices spreading; 1-6 in.

Plant glabrous; leaves fleshy, apices blunt; sepals *sub-erect*; 1-6 in.

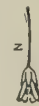
Stems prostrate, tufted, hairy; leaves awned; peduncle reflexed after flowering; *peduncle and calyx alandular*; petals as long as sepals SU; 1-2 in.



Stems prostrate, central stem erect and barren; leaves shortly pointed, glabrous; *peduncle and calyx glabrous*; petals shorter than sepals; 1-1 $\frac{1}{2}$ in.

Sepals, petals, styles 5; petals white.

Pedicels a *few times* longer than calyx N.



[Knotted Spurrey.]

Stems dense, tufted; leaves glabrous; petals *slightly longer* than calyx; 1-1 $\frac{1}{2}$ in.

XIII. *Stellaria L. Stitchwort.*—

Leaves *oval*, lower ones stalked M; stem rounded, flowers white.



Petals *much longer* than sepals; stem entirely hairy; 1-2 ft.

Petals *not longer* than sepals; stem with two hairy lines; 4-16 in.

Petal *not deflex* to base H; bracts herbaceous;



sepals without prominent nerves; petals 2-3 times longer than sepals SH; 1-2 ft.



1. *S. procumbens* L.
Common Pearlwort.
Waste places; May-Sept. P.

2. *S. apetala* L.
Annual Pearlwort.
Dry places; May-Sept. A.

3. *S. ciliata* Fr.
Ciliated Pearlwort.
Dry places; May-July. A.

4. *S. maritima* Don.
Sea Pearlwort.
Sea coasts; May-Sept. A.

5. *S. subulata* Presl.
Heath Pearlwort.
Dry or moist places; June-Aug. P.

6. *S. Saginoides* Dalla Torre.
Mountain Pearlwort.
Mountains; June-Aug. P.

7. *S. nodosa* Fenzl.
Knotted Pearlwort.
Wet, sandy places; July-Sept. P.

8. *S. nivalis* Fr.
Alpine Pearlwort. VR.
High mountains; July-Aug. P.

1. *S. nemorum* L.
Wood Stitchwort. R.
Damp shady places; May-July. P.

2. *S. media* Vill.
Common Chickweed. C.
Damp places; Jan.-Dec. A.

3. *S. Holostea* L.
Greater Stitchwort. C.
Hedges and woods; Apr.-June. P.

4. *S. palustris* Retz.
Marsh Stitchwort.
Marshes: May-Aug. P.
5. *S. graminea* L.
Lesser Stitchwort. C.
Pastures and hedges: May-Aug. P.
6. *S. uliginosa* Murr.
Bog Stitchwort.
Bogs and ditches: May-July. A, B. or P.

1. *H. umbellatum* L.
Umbellate Holosteum. V.R.
Old walls and roofs: Apr.-May. A.

1. *A. tenuifolia* L.
Fine-leaved Sandwort. Loc.
Dry places; June-July. A.

2. *A. trinervia* L.
Three-nerved Sandwort.
Moist, shady places: May-June. A.

3. *A. serpyllifolia* L.
Thyme-leaved Sandwort.
Dry places: May-Sept. A.

4. *A. leptoclados* Guss. R.
Dry places: May-Aug. A.

5. *A. verna* L.
Spring Sandwort.
Mountains: June-Sept. P.

1. *H. peplodes* Ehrh.
Sea Purslane.
Sand dunes: May-Sept. P.

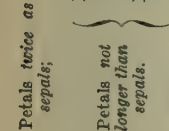
1. *E. hexandra* DC.
Six-stamened Waterpepper. R.
Margins of water: July-Sept. A.

2. *E. Hydropiper* L.
Eight-stamened Waterpepper. V.R.
Margins of water: July-Sept. A.

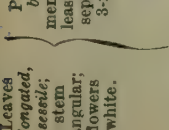
- leaves narrow; bracts glabrous; 1-2 ft.
- leaves broader at base; bracts slightly ciliate; 1-2 ft.
- leaves ovate-lanceolate, apex hard; 4-16 in.



- Petals twice as long as sepals;
- Petals about the same length as sepals G;
- Petals shorter than sepals A;



- Petals clef to base; bracts membranous, at least at margins; sepals distinctly 3-nerved GR.
- Petals not longer than sepals.
- Lower leaves petiolate TR, distinctly 3-nerved, ciliate;
- Leaves linear AT; fruit 3-valved;
- Leaves oval 8, TR; fruit 6-valved.



XIV. *Holosteum* L. *Holosteum.*—(Figs. H, HU, p. 27.)

Lower leaves narrowed at base into stalks; flowers white or pinkish-white; 2-8 in.

XV. *Arenaria* L. *Sandwort.*—

Petals white, shorter than sepals; sepals distinctly 3-nerved; plant an annual.

Petals white, longer than calyx AV; sepals 1-nerved, green, margin slightly membranous; 4-12 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

XVI. *Honckenia* Ehrh. *Honckenia.*—(Figs. HP, PE, p. 27.)

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate; 4-18 in.

ELATINACEÆ.

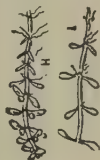
1. *Elatine* L. *Elatine.*—

Leaves opposite H, T, lower ones stalked; flowers rose.

Petioles short H; flowers stalked; petals and styles 3; stamens 6; seeds [Waterwort.]

Petioles longer I; flowers sessile; petals and styles 4; stamens 8; seeds very curved; 1-3 in. [Waterwort.]

Petioles longer I; flowers sessile; petals and styles 4; stamens 8; seeds very curved; 1-3 in. [Waterwort.]



LINACEÆ. The inflorescences of this N.O. are similar to those of the N.O. Caryophyllaceæ. The cultivated Flax is the source of the textile linen fibres.

Parts of flower in *four*; sepals 2 or 3-cleft.

Parts of flower in *five*; sepals entire.

I. Radiola Hill. *Allseed.*—

Leaves very small, spreading, opposite, sessile R; plant glabrous; flowers white; 1-2 in. [Flax-seed.]



II. Linum L. *Flax.*—

Leaves opposite C; flowers white, often yellow at base;



sepals glandular at margins; 4-12 in. [Purging Flax.]

Plant *annual*; stem *erect*, branched in upper part; sepals pointed; capsule globular U; flowers deep blue; 1-2 ft.



[Linseed.]

Stem *prostrate*, branched at base; sepals pointed; flowers pale-blue; 1-2 ft.

Plant *perennial*.

Stems *usually prostrate*, branched at base; sepals *blunt*; flowers deep-blue; 1-2 ft.

TILIACEÆ. The species are often cultivated as ornamental trees; their flowers are used in medicine.

I. Tilia L. *Lime.*—(Fig. TI, p. XX.)

Young twigs *hairy*; leaves downy beneath especially at branching of veins; fruit woody, downy, 3-5 angled.

Young twigs *glabrous*; leaves downy in axils of veins.

Fruit woody, downy, *not ribbed*.

Fruit leathery, downy, *faintly ribbed*.

I. Radiola Hill., p. 34. *Allseed.*

II. Linum L., p. 34. *Flax.*

1. *R. linoides* Roth
Allseed. Loc.
Damp heaths; June-Aug. A.

1. *L. catharticum* L. $\frac{1}{2}$
Cathartic Flax. C.
Pastures and meadows; June-Aug. A.

*2. *L. usitatissimum* L. $\frac{1}{2}$
Common Flax.
Waste places; escape: July-Sept. A.

3. *L. angustifolium* Huds.
Pale Flax. Loc.
Sandy and chalky Places July-Aug. P.

4. *L. perenne* L.
Perennial Flax. R.
(Calcareous places; June-July. P.)

1. *T. platyphyllos* Scop. $\frac{1}{2}$
Broad-leaved Lime. R.
Rocky woods; June-July. P.
*2. *T. europæa* L.
Common Lime.

3. *T. ulmifolia* Scop.
Small-leaved Lime.
Old woods; July-Aug. P.

MALVACEÆ. Certain species are used in medicine as emollients; the roots, stems and leaves are all employed.

(Involucre 3-lobed; stigma obtuse.

Bracts of involucre or epicalyx united.

Involucre 3-9 lobed AO; stigma acute.

Involucre or epicalyx of 3 bracts, *separate* (Figs. MS, MM, below); stigma obtuse.

I. *Lavatera* I. *Lavatera*.—

Stem *woody*, stout; leaves 7-angled, plaited, softly downy; flowers on short pedicels, axillary, clustered, form terminal racemes, purplish-rose, darker veined; 3-8 ft.

Stem *herbaceous*, hispid; leaves cordate below, 5-lobed above; flowers shortly stalked, axillary, pale purple; 2-4 ft.

II. *Althæa* L. *Althæa*.—(Fig. AO, above.) The Hollyhock belongs to this genus.

Plant softly downy: flowers clustered, axillary, rose; carpels downy; 2-3 ft.

plant *hispid*, flowers *solitary*, axillary, pale rose or white; carpels glabrous; 6-18 in.

M. L. Malva L. *Mallow.*—

Stem prostrate;
bracts linear
MR; fruit hairy.

Flowers clustered, axillary.

Stem erect; bracts
purple; 2-3 ft.

Flowers solitary, axillary, rose or white;
bracts linear MM; fruit hairy;



- I. *Lavatera* L., p. 35.
Lavatera.
- II. *Althæa* L., p. 35.
Althæa.
- III. *Malva* L., p. 35.
Malvaceæ.

1. *L. arborea* L.
Tree Mallow. Loc.
Maritime rocks: July-Sept. P.
- * 2. *L. sylvestris* Brot. & A.
Waste places: June-Aug. P.
1. *A. officinalis* L. $\frac{H}{H}$
Marsh Mallow.
Marshes near sea: Aug.-Sept. P.
2. *A. hirsuta* L.
Hespid Athysa. Loc.
Waste places: June-Aug. A.

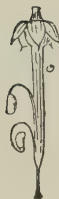
1. *M. rotundifolia* L. ♀
Dwarf Mallow. C.
Waste places: June-Sept. P.
- *2. *M. pusilla* With.
Waste places: June-Sept. P.
3. *M. sylvestris* L. ♀
Common Mallow. C.
Waste places: June-Sept. P.
4. *M. moschata* L.
Musk Mallow.
Shady places: July-Aug. P.

The species contain diverse fragrant essences, particularly in their glandular hairs.

Stamens 10, all
with anthers GE;
[Bramine flowers
in bud.]



ripened carpels remain attached above;
awn elastic rolling once on itself G.



I. *Geranium* L., p. 36.
Geranium.

Stamens 10, 5
with anthers, 5
without ER;



ripened carpels become entirely detached;
awn rolls on itself resembling a corkscrew E,
strongly hygroscopic. J



II. *Erodium* L'Hérit.,
p. 38.
Erodium.

I. *Geranium* L. *Geranium.* [Crane's-bill.]—

Petals
entire
R, I, GR.

Leaves
palmately
lobed;
segments
rounded.

Sepals hairy, not
wrinkled BO;



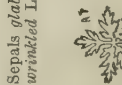
plant hairy R; carpels
not wrinkled; flowers
pink; 8-20 in.



1. *G. rotundifolium* L.
Round-leaved Geranium.
Roadsides: May-Aug. A.

Petals
entire
R, I, GR.

Leaves
deeply
divided RT;



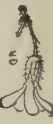
plant glabrous L;
carpels wrinkled;
flowers rose; 8-16 in.



2. *G. lucidum* L.
Shining Geranium.
Walls; hedges: May-Aug. A.

Petals
entire
R, I, GR.

Leaves
deeply
divided RT;



sepals acute GR; plant hispid, strong
smell; flowers rose, veined white;
8-24 in.

3. *G. Robertianum* L. ✕
Herb Robert. C.
Hedges; rocky and waste places:
May-Sept. A.

Flowers
not
more
than
1 cm. in
diameter.

Petals
about
as long
as sepals.

Sepals not membranous
at margin D; pedi-
cels shorter than
neighbouring leaves;



leaves deeply divided; seg-
ments 5, 7 or 9, deeply
lobed; flowers deep pink;
8-20 in.

4. *G. dissectum* L.
Cut-leaved Geranium. C.
Dry ground: June-Aug. A. or B.

Petals
more

Sepals membranous
at margin C; pedi-
cels longer than
neighbouring leaves;



leaves more deeply divided than
above; flowers rose; 1-2 ft.

5. *G. columbinum* L.
Long-stalked Geranium.
Gravelly and chalky places:
June-Aug. A.

or less
notched
M, P.

Petals
longer
than
sepals.

Carpels
wrinkled
slant-wise
MO,
glabrous;



bruised plant has smell
like Indian ink; flowers
rose or purple M; 6-12 in.

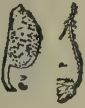


6. *G. molle* L.

Dove's-foot Geranium C.
Waste and cultivated ground;
Apr.-Sept. A.

Carpels

not wrinkled, more or less hairy PU;
flowers pink, very small P; 6-18 in.



7. *G. pusillum* L.

Small-flowered Geranium.
Waste and cultivated ground
June-Sept. A.

Petals almost
reflexed PH,
dark purple;



carpels
wrinkled near apex GP;
8-24 in.



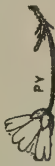
*8. *G. phæum* L.

Dusky Geranium. R.
Hilly woods and near streams;
June-Aug. P.

Calyx
and
pedicels
with
glandular
hairs,
i.e.

hairs with
small
round
mass
at apex.

Petals
deeply notched PY; outline of leaf
as a whole rounded; seeds smooth;
1-2 ft.



9. *G. pyrenaicum* Burm.
Mountain Geranium. LOC.
Shady roadsides and waste
places; June-Aug. P.

Petals
not
reflexed,
purple;
carpels
smooth.

Petals hairy at base along margins PR;
filaments flattened and triangular at
base; 1-2½ ft.



10. *G. pratense* L.
Meadow Geranium.
Damp, shady places; June-
July. P.

Petals hairy at base along margins and on
upper surface SI; filaments narrow at
base; 1-2½ ft.



11. *G. sylvaticum* L.
Wood Geranium.
Woods and thickets; June-Aug.
P.

Calyx
and
pedicels
with
simple
hairs.

Leaves with narrow segments; carpels with
several long hairs at apex; flowers crim-
son, solitary S; 1-2 ft.



12. *G. sanguineum* L.
Blood-red Geranium. LOC.
Dry woods and pastures; July-
Aug. P.

Leaf-segments as broad as long; petals notched NO; fruit-stalks
erect; carpels with a transverse wrinkle at apex; flowers pale
purple; 1-2 ft.



*13. *G. nodosum* L. VR.
Shady places; July-Aug. P.

II. *Erodium* L'Héril. *Erodium*. [Stork's-bill.] —

Leaves *compound*. { Leaflets *deeply divided*, lobes toothed EC; petals *unequal*, rose or white; fruit with glandish hairs; 4-16 in. [Hemlock Stork's-bill.]



1. *E. cicutarium* L'Héril. *Common Erodium*. Waste places; dry pastures May-Aug. A. or B.

Leaves *ovate*, toothed; petals *almost equal*, pink; fruit with white hairs; strong musk-like smell; 4-24 in.



2. *E. moschatum* L'Héril. *Musk Erodium*. R. Waste places near sea: June-Aug. A.

Leaves *lobed or toothed*, small; peduncles few-flowered; flowers small; petals pink, often absent; plant softly hairy, often viscid; 4-18 in.

3. *E. maritimum* L'Héril. *Sea Erodium*. R. Dry places near sea: May-Aug.

HYPERICACEÆ.

The plants have glands of two kinds, pellucid and black, easily seen in the leaves. The flowers of several of the species, infused in oil, are used for wounds. Tutuan and the Rose of Sharon are the chief species cultivated as ornamental plants.

I. *Hypericum* L. *Hypericum*. —

Stem *erect*; petals about same length as sepals A; styles 3 *recurved*; ripe fruit black; 1-3 ft.



1. *H. Androsæmum* L. *H. Tutuan*. Loc. Thickets: June-Aug. P.

Plant a *shrub*; flowers yellow; stamens in 5 *bundles* A; fruit slightly *succulent*.

Main stem *creeping*; branches erect; flowers solitary, very large (3-4 in.); styles 5, straight; 6-18 in.

*2. *H. calycinum* L. *Large-flowered Hypericum*. R. Thickets: June-Sept. P.

[Rose of Sharon.]

Flowers with small coloured scales g, at base of corolla EP;



leaves as wide as long, sessile, woolly; 4-12 in.

3. *H. elodes* L. *Marsh Hypericum*.

Spongy bogs: July-Aug. P.

Stem *prostrate, very slender* HU; flowers small, less than 1 cm. in diameter;



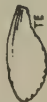
midrib alone prominent; sepals with a few black glands; 4-8 in.

4. *H. humifusum* L. *Trailing Hypericum*.

[Creeping St. John's Wort.

Stony, wet and dry places: July-Aug. P.

- Plant herbaceous; flowers yellow; stamens in 3 bundles H, HP; fruit dry.
- Stem erect.
- Corolla without scales H; leaves not woody.
- Sepals bordered with glands M, P; stem rounded.
- Sepals *acute* with stalked glands M.
- Stem *glabrous* LI, MO; leaves *sessile*, amplexicaul.
- Leaves *linear* LI, margins inrolled;
- Stem *hairy* HI;
- pedicels longer than calyx; 8-16 in.
- pedicels shorter than calyx; 1-2 ft.
- leaves shortly stalked HI; nerves not prominent; 1-2 ft. [Hairy St. John's Wort.]
- leaves amplexicaul, nerves prominent, black glands absent; flowers often veined red; 1-2 ft. [Slender St. John's Wort.]
- stamens shorter than petals; 1-2½ ft.
- Stem 2-edged PE; [PE, stem cut transversely.]
- Stem 4-angled Q, or 4-winged T. [Q, T, stems cut transversely.]
- Sepals not bordered with glands; stem more or less angular.
5. *H. linearifolium* Vahl
Flax-leaved Hypericum. R.
Dry rocky places: July-Aug. P.
6. *H. montanum* L.
Mountain Hypericum. R.
Woods: June-Aug. P.
7. *H. hirsutum* L.
Hairy Hypericum. C.
Woods and thickets: July-Aug. P.
8. *H. pulchrum* L.
Slender Hypericum. C.
Dry heaths, banks, woods: June-Aug. P.
9. *H. perforatum* L.
St. John's Wort. VC.
Woods and roadsides: July-Sept. P.
10. *H. quadrangulum* L.
Square-stalked Hypericum.
Damp shady places: July-Aug. P.
11. *H. tetrapterum* Fr. P.
Damp shady places: July-Aug. P.



ACERACEÆ. Several species are cultivated as ornamental trees. The plants contain much sugar.

I. Acer L. Maple.—

Leaf-lobes *entire*
or sinuate AC;



lower surface of leaf pale green; flowers greenish, erect; wings of fruit diverging horizontally.

Leaf-lobes
toothed
AP, PP.



Margin *deeply*
indented, teeth
acute AP;

both surfaces of leaf green; flowers yellowish, erect.

Teeth *short* and
not so
acute PP;



lower surface of leaf whitish; flowers greenish, pendulous; wings of fruit erect or slightly diverging.

*3. **A. Pseudo-Platanus**
L.¹

Sycamore.

Cultivated: May-July. P.

AMPELIDACEÆ. The order includes several climbing species often cultivated, e.g. *Virginian Creeper*. —

I. Vitis L. Vine.—(Fig. V, p. XXII.)

Shrub climbing by branch tendrils; petals greenish, united above;

stamens 5.

*1. **V. vinifera L.** ♀

Grape Vine.

Cultivated: June. P.

HIPPOCASTANEÆ.

I. Æsculus L. Horse Chestnut.—Tree; leaves compound, palmate; buds viscid; flowers rose or pinkish-white; stamens usually 7 (Fig. H, p. XXII.)

1. **Æ. Hippocastanum**
L. ♀

Horse Chestnut.

Cultivated: June. P.

BALSAMINACEÆ. The well-known garden Balsam is *I. Balsamina*; *Touch-me-not* is sometimes cultivated.

I. Impatiens L. Balsam.—(Fig. I, p. XXIV.)

Leaves soft, oval, petiolate; flowers large, *yellow spotted with orange*; spur *loosely reflexed*, not notched; 1-3 ft.
(*Touch-me-not*.)

1. **I. Noli-tangere L.** ♀

Yellow Balsam. R.

Damp, hilly woods: July-Sept. A

*2. **I. biflora Walt.**

Orange Balsam. Loc.

Banks of streams: July-Oct. A.

*3. **I. parviflora DC.**

Small Yellow Balsam. Loc.

Waste shady places: July-

Sept. A.

Leaves more acute; flowers deep *orange*, *spotted with red*; spur *closely reflexed*, notched; 1-3 ft.

Leaves acute apex and base; flowers small, *pale yellow*; spur *short, straight*; 1-2 ft.

OXALIDACEÆ. The leaves of the plants contain oxalic acid, hence the name of the natural order.

I. Oxalis L. *Oxalis*.—


Leaves all springing from base O; flowers solitary O, white or pale pink; 2-5 in.

Leaves
cauline;
flowers
not solitary,
yellow.

Stem erect, glabrous; stipules absent; peduncle 2-8 flowered S; 4-16 in.

Stems prostrate, hairy; stipules present; peduncle 2-flowered; petals notched; 4-16 in.



1. **O. Acetosella L.** 
Wood-sorrel. O.
Woods; May-Aug. F.

*2. **O. stricta L.**
Erect Oxalis. Loc.
Waste places; June-Sept. F.

*3. **O. corniculata L.**
Procumbent Oxalis. Loc.
Waste places; June-Sept. P.

CELASTRACEÆ. Several lexotic species are occasionally planted in shrubberies.

I. Euonymus L. *Spindle-tree*.—Tall shrub; leaves simple, toothed (Fig. EV, p. XXII), opposite; flowers greenish or purplish white, small; fruit red, dehiscent, 4-seeded; seed surrounded by orange-coloured aril.

AQUIFOLIACEÆ. The Holly is sometimes cultivated to form hedges, or as an ornamental shrub.

I. Ilex L. *Holly*.—

Tall shrub; leaves simple, leathery, margins spinous (Fig. I, p. XXV); evergreen; berries red, seldom yellow flowers yellowish-white, clustered, axillary.

RHAMNACEÆ. The bark and fruits are used in medicine.

I. Rhamnus L. *Buckthorn*.—

Flowers perfect F; calyx 5-cleft; stamens 5;




styles united F; branches not thorny; flowers greenish-white; fruit dark purple. [Black Alder.]


Flowers dioecious;
staminate R;
pistillate RC;
calyx 4-cleft;
stamens 4;



styles free at apex C; branches thorny or otherwise; flowers yellowish-green; fruit black.

1. **I. Aquifolium L.**
Common Holly. C.
Hedges; woods; May-Aug. P.

1. **R. Frangula L.** 
Alder Buckthorn.
Damp bushy places; May-Sept. P.

2. **R. catharticus L.** 
Common Buckthorn.
Hedges and bushy places; May-Sept. P.

1. The cultivated Ash-leaved Maple (*Negundo fraxinifolium* Nutt.) is distinguished by its deeply divided leaves and its monrecious flowers.

LEGUMINOSÆ.

The British members of this Order belong to the sub-order *Papilionaceæ*.

Some species are cultivated for their fruits or seeds, e.g. Beans, Peas, Lentils; others as forage, e.g. Clover, Lucerne, Sainfoin; others as ornamental plants, e.g. Robinia (commonly called Acacia), Laburnum, Spanish Broom, Bladder Senna.—The fruit, more or less ripe, is often useful as an aid in determining a species.

Leaves terminated by a leaflet.

Leaves terminated by a tendril or a short point.

Tribe I. LOTEÆ.

Leaves digitate, stipulate; stem stout, leafy, herbaceous; flowers in raceme.

Stipules absent or very small (1-2 mm.); *shrub*, but sometimes very small and almost herbaceous.

Calyx deeply bifid U;



leaves spinous U; corolla scarcely longer than calyx.

Calyx not divided below middle, S, G.

Calyx membranous, teeth short S.



Calyx not membranous, teeth deep G.



Stipules very like leaflets LO; flowers usually in a head LO.



Leaves with stipules longer than 2 mm.; plant usually herbaceous.

Stipules small different from leaflets.

Flowers often solitary, axillary on leafy branches O;



keel beaked, recurved over stamens and pistil.

Corolla persistent, becoming membranous.

Flowers in heads; fruit not longer than calyx, 1-4 seeded.

Flowers in racemes; fruit much longer than calyx; several seeds.

Tribe I. **LOTEÆ**, p. 42.

Tribe II. **VICIEÆ**, p. 44.

I. **Lupinus** L., p. 44.
Lupinus.

II. **Ulex** L., p. 44.
Furze.

III. **Cytisus** L., p. 44.
Broom.

IV. **Genista** L., p. 45.
Genista.

V. **Lotus** L., p. 45.
Bird's-foot Trefoil.

VII. **Ononis** L., p. 48.
Ononis.

VI. **Trifolium** L., p. 46.
Clover.

VIII. **Trigonella** L., p. 48.
Trigonel.

- IX. *Medicago* L.,
p. 48.
Medick.
X. *Meilolotus* Hill,
p. 49.
Meilot.

- XI. *Anthyllis* L., p. 49.
Anthyllis.

- XII. *Astragalus* L.,
p. 49.
Astragal.

- XIII. *Oxytropis* DC.,
p. 49.
Oxytropis.

- XIV. *Onobrychis* Hill,
p. 50.
Sainfoin.

- XV. *Ornithopus* L.,
p. 50.
Bird's Foot.

- XVI. *Coronilla* L., p. 50.
Coronilla.

- XVII. *Hippocrepis* L.,
p. 50.
Hippocrepis.

distinct from leafy branches M. } Raceme short; fruit curved or twisted spirally.
Corolla deciduous. } Raceme long M; fruit straight AB.



Flowers in a close raceme, resembling a head; calyx inflated A; terminal leaflet large AV

Fruit long, 2-chambered G, partition imperfect; stipules free or united to petiole. } Keel obtuse; partition in fruit projecting from angle next to keel.
Flowers in a more or less elongated raceme. } Keel pointed; partition in fruit formed from angle bearing seeds, i.e. away from keel.



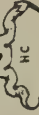
Fruit short, 1-seeded SA; stipules united to each other; flowers almost in a spike OS.



Flowers small (shorter than 1/4 in.), few in umbel OP; fruit jointed, resembling a string of beads.



Calyx teeth unequal CV, fruit not notched VA.



Calyx teeth almost equal H; fruit successively notched HC.

Flowers umbellate; fruit divides transversely into 1-seeded joints.

Flowers longer than 1/4 in.

Leaves with more than three leaflets OS, OP.

Tribe II. VICIEÆ.—

Stipules larger
than leaflets P;



style flattened, grooved.

Stipules
not larger
than
leaflets.

Leaflets usually 0-4, main veins *nearly parallel* L; style flattened.



Leaflets usually *many* V, main veins *divergent*.



I. *Lupinus* L. *Lupinus*.—

Plant hairy; calyx deeply bi-fid, 5-toothed; flowers numerous, blue or purple; 1-2 ft.

II. *Ulex* L. *Furze*; *Goose*; *Whin*.—

Calyx very hairy UE; bracts below calyx broader than pedicel UE; flowers bright yellow; 2-6 ft.



Calyx *slightly*
hairy or downy
N: bracts below
calyx narrower
than pedicel N.

Spines *strong*; wings slightly curved, longer than keel N fruit persistent till spring; 1-5 ft.



Spines *slender*; wings shorter than keel; fruit persistent for a year; 1-3 ft.

III. *Cytisus* L. *Broom*.—(Fig. S., p. 42.)

Stem erect, branched, green; leaves small, simple or trifoliate, hairy on both surfaces; style rolled on itself in older flowers; petals golden yellow; 2-6 ft.

XVIII. *Pisum* L., p. 50.
Pisum.

XIX. *Lathyrus* L., p. 50.
Lathyrus.

XX. *Vicia* L., p. 52.
Velch.

1. *L. nootkatensis* Donn
Lupine. LOC.
River shingle: July-Aug. P.

1. *U. europæus* L. H
Furze. C.
Heaths: Feb.-July. P.

2. *U. Gallii* Planch.
Western Furze.
Heaths: July-Nov. P.

3. *U. minor* Roth
Small Furze.
Heaths: July-Nov. P.

1. *C. scoparius* Link H
Common Broom. C.
Heaths: May-June. P.

Stem prostrate; leaves hairy on under surface; corolla yellow, hairy GP; fruit hairy; 8-12 in.



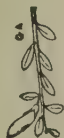
1. *G. pilosa* L.
Hairy Genista. R.
Heaths: May-Sept. P.

Stem erect; leaves glabrous; corolla yellow, glabrous GT; fruits glabrous; 1-2 ft.



2. *G. tinctoria* L. ✠
Dyer's Genista. P
Thickets: July-Sept. P

almost oval; flowers yellow; 1-2 ft.
[Petty Whin.]



Branches terminating as thorns; stem erect;
plant entirely glabrous GA; leaves


3. *G. anglica* L.
Needle Genista. P.
Heaths: May-July. P.

V. *Lotus* L. *Bird's-foot Trefoil*.—(Fig. I.O., p. 42.)

Stem erect; calyx teeth spreading in bud, two upper diverging; claw of standard linear; 6-24 in.

1. *L. uliginosus* Schk.
Marsh Bird's-foot Trefoil.
Moist, bushy places: July-Sept. P.

Stem decumbent, or erect; calyx teeth erect in bud, two upper converging; claw of standard nearly oval.

Leaflets obovate; flowers 5-10 in a head; 4-18 in. 
Leaflets narrow; flowers fewer and smaller than above; stems slender; 12-24 ft.

2. *L. corniculatus* L.
Bird's-foot Trefoil. O.
Pastures: July-Sept. P.

Peduncles shorter than leaves, 1-2 flowered; fruit several times longer than calyx LC; stems slender; 2-8 in.



3. *L. tenuis* W. and K.
Narrow-leaved Bird's-foot Trefoil.
Poor pastures: July-Sept. P.

Plant an annual; procumbent; flowers yellow, fewer than 5 in a head.

Peduncles longer than leaves, 3-4 flowered; fruit twice as long as calyx; stems more hairy than above; 2-12 in.

4. *L. angustissimus* L.
Slender Bird's-foot Trefoil.
Pastures near sea: June-Aug. A.
5. *L. hispidus* Desf.
Hispid Bird's-foot Trefoil.
Pastures near sea: June-Aug. A.

VI. Trifolium L. Clover, Trefoil. The species are often difficult to determine. It is necessary that the plant chosen should have almost ripe fruits, surrounded by the persistent corollas.

<p>Leaflets hairy.</p>	<p>Leaflets broadly obovate SU.</p>	<p>Leaflets narrowly obovate OC;</p>	<p>lowest tooth of calyx twice as long, as the others; flowers in heads, yellowish or cream; 1-1½ ft.</p>
<p>Standard striated with longitudinal furrows.</p>	<p>Standard smooth; style much shorter than fruit TF; flowers pale yellow, 2-6 in a head; 2-12 in.</p>	<p>Flowers 2 or 3 on one peduncle, yellowish, standard often pink; fruits bury themselves in ground; 4-18 in.</p>	<p>Flowers in globular heads, cream; calyx teeth in fruit spreading like a star; 4-12 in.</p>
<p>Leaflets almost always attached at one point AG;</p>	<p>Terminal leaflet almost stalked, stipules oval, pointed P; peduncle 2-3 times as long as head PR; style about 6 times shorter than fruit.</p>	<p>stipules narrow at apex AG; flowers numerous (about 50) in globular heads TA, bright yellow; style as long as fruit; 8-16 in.</p>	<p>Flowers 30-50 in a head, yellow; 4-18 in.</p>

1. **T. ochroleucum** Huds.
Sulphur Trefoil. Loc.
Dry pastures; June-Aug. P.

2. **T. subterraneum** L.
Subterranean Trefoil.
Dry pastures: May-June. A.

*3. **T. stellatum** L.
Starry Trefoil. Loc.
Shingle beach; June-Aug. A.

4. **T. filiforme** L.
Slender Trefoil. R.
Dry pastures; June-July. A.

*5. **T. agrarium** L.
Large Hop Trefoil.
Cultivated ground; June-Sept. A. or B.

6. **T. procumbens** L.
Hop Trefoil. C.
Pastures, meadows; June-Sept. A.

7. **T. dubium** Sibth.
Lesser Yellow Trefoil. C.
Pastures and meadows; June-Aug. A.

8. **T. maritimum** Huds.
Sea Trefoil. Loc.
Salt marshes; rich meadows near sea; June-July. A.

9. **T. repens** L. $\frac{1}{2}$
Dutch or White Clover. C.
Pastures; meadows; May-Sept. P.

*10. **T. hybridum** L.
Alsike-Clover.
Roadsides; escape; June-Sept. P.

11. **T. strictum** L. VR.
Upright Trefoil. A.
Near coast; June-July. A.

*12. **T. resupinatum** L.
Reversed Trefoil. R.
Pastures near sea; July-Aug. A.

<p>Calyx-tube closed round fruit by thickened 2-lipped rim;</p>	<p>sepal acute, spreading; stipules narrow, acute; flowers white or pinkish; 4-16 in.</p>	<p>Flowers white; stems creeping, rooting R; stipules small R; 4-18 in.</p>	<p>Flowers 12-20 in a head, pale yellow; plant more slender and procumbent than above; 4-18 in.</p>
<p>Heads of flowers on peduncles R.</p>	<p>Flowers on pedicels TE, later reflexed.</p>	<p>Flowers pink; stems erect, or never rooting; stipules large E; 8-24 in.</p>	<p>Calyx-teeth short, finely pointed; 2-6 in.</p>
<p>Standard striated with longitudinal furrows.</p>	<p>Flowers sessile, 708c.</p>	<p>Calyx inflated after flowering; lateral margins of standard turned outwards; 4-9 in.</p>	<p>Flowers yellow, yellowish or cream.</p>

13. *T. glomeratum* L.
Clustered Trefoil. R.
Dry places: May-June. A.
14. *T. suffocatum* L.
Suffocated Trefoil. R.
Sandy coasts: May-June. A.
15. *T. fragiferum* L.
Strawberry Clover.
Dry meadows and pastures:
July-Sept. P.

- *16. *T. incarnatum* L.
Crimson Clover.
Cultivated fields: June-July. A.
17. *T. Molinerii* Balb.
Loc.

- Pastures: May-June. A.
18. *T. pratense* L. $\frac{H}{P}$
Purple Clover. VC.
Pastures; meadows: May-Sept.
P.


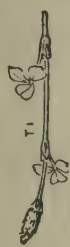




19. *T. medium* L.
Zigzag or Meadow Trefoil.
Dry open woods and hedges:
June-Sept. P.

20. *T. arvense* L.
Hare's-foot Trefoil. C.
Dry pastures and corn-fields:
July-Sept. A.

21. *T. scabrum* L.
Rough Trefoil.
Dry pastures near sea: May-July. A.

22. *T. striatum* L.
Knotted Trefoil.
Dry pastures: June-July. A.

23. *T. Bocconei* Savi
Boccone's Trefoil. VR.
Coast: June-July. A.

Stems spreading; heads of flowers axillary and terminal, rose; 2-15 in.									
Stems tufted, buried in sand; heads of flowers axillary, crowded at base of branches, white; 1-3 in.									
Head swollen and very compact F; flowers almost united; calyx much inflated;		petioles long; petals rose; 4-16 in.							
Head of flowers elongated TI; 4-6 cm.		Flowers red; hairs on stem spreading; 6-18 in.							
Flowers purplish.		Flowers pinkish-white; hairs on stem adpressed; 6-12 in.							
Stipules shortly pointed TP; calyx hairy PR; 4-16 in.									
Stipules with long pointed apices TM; calyx-teeth hairy ME; 4-18 in.									
Head cylindrical, softly hairy A, pedunculate;		leaflets narrow; calyx-teeth long; 4-12 in.							
Leaflets with lateral veins prominent and thickened		at margin SC; 4-10 in.							
Heads more or less oval, not softly hairy.		Leaflets obovate SR; stem procumbent; 8-16 in.							
Flowers white or pinkish.		Leaflets longer and narrower M; stem erect; 2-6 in.							

Stem and leaves more or less hairy.

Head not swollen or very compact.

Head not more than 3 cm. long.

Calyx-tube not closed by a thickened rim.

Flowers white, pink or purple.

VII. *Ononis* L. *Ononis*.—(Fig. O, p. 42.)

Stem *spinous*, erect; fruit as long as or longer than calyx S; leaves hairy, viscid; flowers rose; 6-18 in.



Stem *not spinous*; flowers rose. { Fruit *shorter* than calyx R; stems spreading; leaves hairy, viscid; 1-2 ft.



{ Fruit *reflexed*; stems ascending or decumbent; plant slightly hairy, viscid; 1-6 in.

VIII. *Trigonella* L. *Trigonella*.—

Stems prostrate, matted, glabrous; flowers white or pink, small, 1-3 on peduncle; fruit slightly curved; 2-8 in.

IX. *Medicago* L. *Medicago*.—

{ Flowers *purple* or *bluish*; pedicel *shorter* than bract SA; fruit spiral, coils 1-3 S; 1-2½ ft.



{ Fruits *without prickles* S, F, L. { Pedicel *longer* than bract. { Stem prostrate; fruit *sickle-shaped* F; 1½-2½ ft.



{ Flowers *yellow*. { Flowers *seesile*; stems spreading; fruit *curved, rounded* I, black when ripe; 6-24 in. [Nonsuch.]



Plant *hairy*; stipules *entire*; fruit closely spiral, coils 2-4 MI, prickles *hooked*; 4-12 in.



{ Fruit *covered with prickles* MI, MA, A; flowers *yellow*. { Plant { Prickles *curved* MA; fruit closely spiral, coils 3-4-furrowed on edge; leaflets with a *dark spot* in centre; 12-20 in.



{ Prickles *hooked*; fruit loosely spiral, coils 2-3, not furrowed; leaflets *without dark spot*; 8-20 in.



1. *O. spinosa* L. $\frac{1}{4}$ *Spinous Rest-harrow.* Barren pastures: June-Sept. P.

2. *O. repens* L. *Rest-harrow.* Barren pastures: June-Sept. P.

3. *O. reclinata* L. *Small Rest-harrow.* VR. Dry ground near sea: May-June. A.

1. *T. ornithopodioides* DC. *Bird's-foot Trigonella.* Loc. Sandy pastures near sea: June-July. A.

* 1. *M. sativa* L. $\frac{1}{4}$ *Lucerne.* Cultivated; escape: June-Aug. P.

2. *M. falcata* L. *Sickle Medick.* R. Stony places; June-July. P.

3. *M. sylvestris* Fr. Stony places: June-July. P.

4. *M. lupulina* L. $\frac{1}{4}$ *Black Medick.* C. Pastures; cultivated: May-Aug. A. or B.

5. *M. minima* Lam. *Bur Medick.* R. Open, waste places: May-July. A.

6. *M. maculata* Willd. *Spotted Medick.* Pastures; waste places: May-Aug. A.

7. *M. denticulata* Willd. $\frac{1}{4}$ *Toothed Medick.* R. Sandy ground: May-Aug. A.

X. Melilotus Hill. Melilot.—

Flowers *white*; standard longer than wings and keel AL; fruit glabrous; 2-6 ft.

Fruit *hairy*, upper edge *acute* OF; standard as long as wings and keel; stem usually erect; 2-6 ft.



Flowers *yellow*. { Fruit *glabrous*, upper edge *obtuse*. } Standard and wings *longer* than keel; fruit *oval*, wrinkled transversely; 1-3 ft.
 { Keel and wings equal, *shorter* than standard; fruit *globular*; flowers very small; 4-12 in.

XI. Anthyllis L. Anthyllis.—(Figs. A, AV, p. 43.)

Upper leaves narrower than lower ones; flowers yellow, seldom reddish; fruit 1-seeded; 8-16 in.

[Lady's Fingers.]

XII. Astragalus L. Astragal.—(Fig. G, p. 43.)

Stem *long*, *glabrous*, zigzag; leaflets *large*; leaves *longer* than peduncle; stipules free GL; raceme fairly [Wild Liquorice.]



close AG; flowers greenish-yellow; 2-3 ft.



Stem *short*, { Leaves *shorter* than peduncle; flowers *purple*; fruit *erect*; 2-9 in.

small. { Leaves *as long as* peduncle; flowers *white tipped with purple*; fruit *pendulous*; 2-5 in.

XIII. Oxytropis DC. Oxytrop.—

Leaves all { Leaves slightly shorter than peduncles, *hairy*; flowers *yellow* tinged with purple; 4-9 in.
radical; {
 leaflets 9-15. { Leaves shorter than peduncles, *silky*; flowers *purple*; 4-9 in.

*1. **M. alba** Desr.
White Melilot.
 Waste places: June-Aug. B.

2. **M. officinalis** Lam. ✕
Common Melilot.
 Shady places: June-Aug. B.

*3. **M. arvensis** Wallr. ✕
Field Melilot.
 Cultivated and waste places: June-Aug. B.

*4. **M. indica** All.
Small Melilot. R.
 Waste places: June-Aug. A.

1. **A. Vulneraria** L. ✕
Kidney Vetch.
 Dry, hilly pastures: June-Aug. P.

1. **A. glycyphyllos** L.
Milk Vetch.
 Shady calcareous ground: June-Sept. P.

2. **A. danicus** Retz.
Purple Astragal. Loc.
 Dry hilly pastures: June-Aug. P.

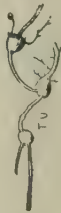
3. **A. alpinus** L.
Alpine Astragal. VR.
 Mountains: June-July. P.

1. **O. campestris** DC.
Yellow Oxytrop. VR.
 Mountains: July-Aug. P.

2. **O. uralensis** DC.
Purple Oxytrop. Loc.
 Dry, hilly pastures: June-July. P.

1. Var. *Wittidenowii* Koch: fruit covered with glandular hairs.—2. Var. *apiculata* Willd.: prickles straight.

- XIV. Onobrychis Hill.** *Sainfoin*.—(Figs. 8A, OS, p. 43.)
 Leaflets numerous; petals striated, pink, seldom white; 8-24 in.
 [Cock's-head.]
- XV. Ornithopus L.** *Bird's Foot*.—(Fig. OP, p. 43.)
 Leaflets } Plant hairy; peduncle with *pinnate leafy bract* below head of flowers; petals pinkish, veined
 numerous; } crimson; beak of fruit curved; 2-12 in.
 stipules }
 very small, } Plant *glabrous*; peduncle *without pinnate bract*; flowers minute, yellow, standard veined crimson;
 membranous. } beak of fruit hooked; 2-6 in.
- XVI. Coronilla L.** *Coronilla*.—(Figs. CV, VA, p. 43.)
 Petals *rose, tinged with white*; each flower on pedicel almost *twice as long as calyx* V; stipules
free; leaves not glaucous; 16-28 in.
- XVII. Hippocrepis L.** *Hippocrepis*.—(Figs. H, HC, p. 43.)
 Flowers yellow, 2-8 on peduncle, slightly pendulous; fruit jointed, rugose 8-16 in. [Horse-shoe Vetch.]
- XVIII. Pisum L.** *Pisum*.—(Fig. P, p. 44.)
 Stem glabrous; leaflets 4-6; flowers white; seeds rounded; 2-5 ft.
- XIX. Lathyrus L.** *Lathyrus*. [Fea.]—
 Tendrils } Aerial stem } underground stem with *tubercles* TU;
 absent } winged T; } leaflets 2-4 pairs; flowers reddish or
 (VT.) } } bluish purple; 6-15 in.
 }
 } Aerial stem } tubercles absent; leaflets 3-6 pairs; flowers variegated red, blue,
 not winged } purple; 1-2 ft.
 (ON.) }
1. **O. sativa** Lam. ✠
Common Sainfoin.
 Calcareous, hilly places; June-
 July. P.
1. **O. perpusillus** L.
Common Bird's Foot.
 Dry places; May-Aug. A.
2. **O. ebracteatus** Brot.
Sand Bird's Foot.
 Sandy places; May-Aug. A.
- *1. **C. varia** L. VR.
 Shady waste places; July-
 Aug. P.
1. **H. comosa** L.
Common Hippocrepis.
 ('calcareous pastures and banks;
 May-Aug. P.
1. **P. sativum** L. ✠
Garden Pea,
 Cultivated; June-Sept. A.
1. **L. macrorrhizus**
 Wimm.
Tuberous Pea.
 Hedges; bushy places; May-
 Aug. P.
2. **L. niger** Wimm.
Black Pea. R.
 Rocky glens; July-Aug. P.



[Leaves with tendrils [except *L. Nissolia*.]

Leaflets well-developed.

Peduncle more than 2-flowered.

Leaflets
absent
A, NI.

Stipules
leaf-like,
very large A;



flowers yellow; fruit about 1 in. long; 1-3 ft.

Petiole leaf-like, flattened NI, green, resembling
a blade of grass; stipules minute NI; flowers
rose; fruit nearly 2 in. long; 1-2 ft.



Flowers yellow;
base of stipules
2-pointed L;



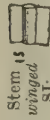
stem almost winged; fruit compressed;
1-3 ft. [Yellow Meadow Vetchling.]

Leaflets
1 pair
L, IT,
LS.

Flowers
red to
purple;
stipules
1-pointed
at base
IT, LS.



Stem not winged IT; underground stem with
tubers; secondary veins of leaflets diver-
gent IT; flowers fragrant; 1½-3½ ft.
[Earth-nut.]



Stem as
winged
SI;
parallel, 3-6 ft.



As above but flowers larger, more showy; hilum shorter, ⅓
encircling seed; 3-6 ft. [Everlasting Pea.]

Peduncle as long as or longer than neighbouring
leaf; flowers bluish-purple; 2-3 ft.



Leaflets
2-4 pairs PA.

Peduncle shorter than leaf; standard purple, veined pale-blue; wings
pale-blue; 4-16 in.

Peduncle 1 or 2-flowered; stem winged; leaflets one pair H; fruit hairy; flower
bluish-red; 1½-3 ft.



3. *L. Aphaca* L.
Yellow Vetchling. R.
Cultivated and waste places;
June-July. A.

4. *L. Nissolia* L.
Grass Vetchling. R.
Fields near borders: May-
June. A.

5. *L. pratensis* L.
Meadow Pea. VC.
Moist meadows and hedges;
June-Sept. P.

*6. *L. tuberosus* L. ✠
Earth-nut Pea. R.
Corn-fields: June-Aug. P

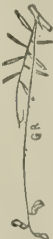
7. *L. sylvestris* L.
Everlasting Pea.
Woods; thickets: June-Aug. P.

*8. *L. latifolius* L. R.
Waste places; garden escape:
June-Aug. P.

9. *L. palustris* L.
Marsh Pea. R.
Moist meadows; marshes: June-
Aug. P.

10. *L. maritimus* Big.
Sea Pea. R.
Sea shingle: July-Aug. P.

*11. *L. hirsutus* L.
Rough Pea. R.
Corn-fields: June-July. B.

Fruit
hairy H;peduncle 1-8 flowered E, as long as
neighbouring leaf; petals bluish-white;
[Tare.] 1-2½ ft.Flowers
shorter than
6 mm.; fruits
than
11 mm.Peduncle 1-2
flowered, as
long as leaf TE;fruit 2-5 seeded ET; petals
pale-blue; 1-2 ft.Fruit
glabrous
ET, G.Peduncle 2-5
flowered, longer
than leaf GR;fruit 5-8 seeded
G; petals pale-
blue; 1-2 ft.Flowers yellow,
solitary; peduncle
short; fruit
hairy L.Leaflets narrow, ovate; standard glabrous;
6-18 in.

Leaflets broad, ovate; calyx-teeth ciliate, hairy; standard hairy; 6-24.

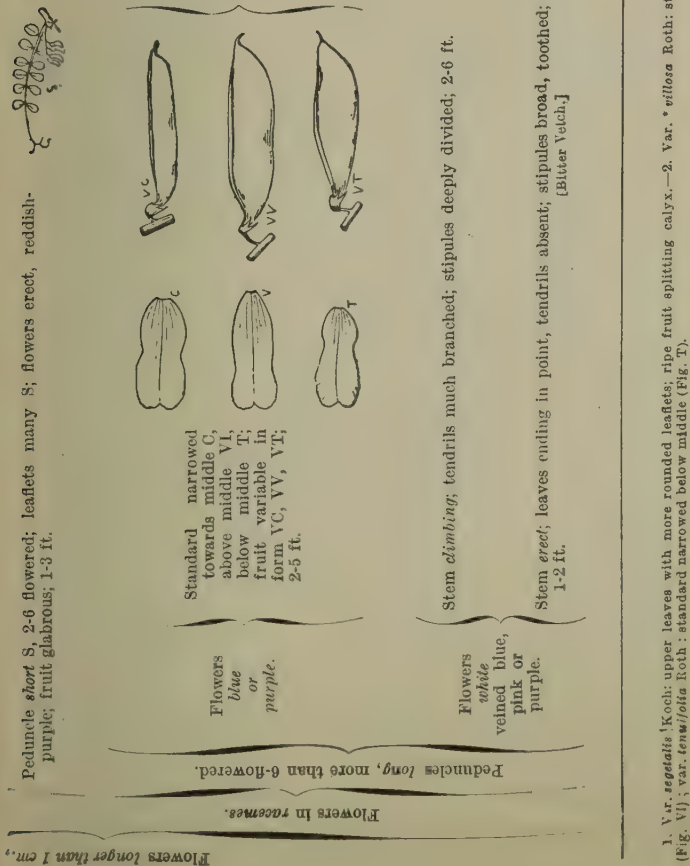
4. *V. lutea* L.*Yellow Vetch.*Dry places near sea; June-
Aug. A.*5. *V. hybrida* L.*Hairy Yellow Vetch.* R.
Waste places; cultivated
ground; June-Aug. A.6. *V. bithynica* L.*Bithynian Vetch.* R.
Bushy stony places; July-
Aug. P.7. *V. sativa* L. ✠*Common Vetch.*
Waste places; May-July. A.Stipule with/
black spot
SA; leaflets
10-14 V.Flowers
reddish-
or
bluish-
purple.

Fruit hairy, rough; leaflets 2-4, long; peduncle short, 1-2 flowered; 1-2 ft.

Leaflets narrow, ovate V;
flowers usually in pairs;
fruit 2-3 in., erect; 6-18 in.Leaflets linear; flowers often solitary; fruit 1-2 in., spreading,
black, not splitting calyx; 6-12 in.Stipule without
black spot LA;leaflets 4-8 VL; flowers solitary;
3-8 in.9. *V. lathyroides* L.*Spring Vetch.*Dry pastures; open woods;
Apr.-June. A.8. *V. angustifolia* L.¹
Narrow-leaved Vetch.
Dry places; Apr.-July. A.

Flowers solitary or in pairs.

Fruits than 2 cm.



1. *V. setigera* Koch: upper leaves with more rounded leaflets; ripe fruit splitting calyx.—2. *Var. villosa* Roth: standard narrowed above middle (Fig. VI); *var. tenuifolia* Roth: standard narrowed below middle (Fig. T).

ROSACEÆ.

This order includes most of our fruit trees. Many species are ornamental, others are used in medicine.



Carpel *1*, *free*,
in centre of
flower P;

leaves entire, rolled lengthways when young; inner part of fruit woody enclosing a seed.

I. **Prunus** L., p. 56.
Prunus.

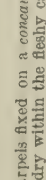


Carpels *several*,
free BU, RO;
leaves
compound.

{ Carpels fixed on a *convex receptacle* RU; fruits as many as carpels,
fleshy.



X. **Rubus** L., p. 59.
Rubus.



{ Carpels fixed on a *concave receptacle* RO; fruits as many as carpels,
dry within the fleshy calyx-tube.



IX. **Rosa** L., p. 58.
Rose.



Flowers *solitary*,
large (diameter
more than 1 in.).



sepals *acute* M; leaves almost or
quite entire MG.

XV. **Mespilus** L., p. 60.
Medlar.



Leaves *lobed* CB; flowers many, in corymbs;
style 1, rarely 2.



XIV. **Cratægus** L., p. 60.
Hawthorn.

Shrub.

Carpels
not free;
ovary united
to calyx.

Flowers
not solitary
(diameter
less than
1 in.).

Leaves *entire* CO; flowers few in drooping
racemes; styles 2-5.



XVII. **Cotoneaster** Med.,
p. 60.
Cotoneaster.



Tree; leaves simple and toothed, lobed, or compound;
flowers many in corymbs, simple P, or branched SA;
styles 3 or 5.



XVI. **Pyrus** L., p. 60.
Pyrus.



Plant a shrub or tree.

Calyx and corolla present.

Calyx double, i.e. epicalyx present P.



Receptacle not swollen and fleshy G, PR, hairy.



Styles very long G, apical;



Styles very short PR, lateral;

Receptacle swollen and fleshy F, C, glabrous.



Leaflets 3 FV; petals rounded at apex F; flowers creamy-white.



Leaflets 5-7 CP; petals acute at apex C; flowers dark purple.

Flowers solitary, white; carpels numerous, separate.

Flowers white or pink, in branched raceme; carpels 3-12, separate.

Epicalyx absent.

Flowers not solitary.



Flowers yellow, in spikes AE; carpels 1-2 free, surrounded by calyx A.

Leaves lobed more or less deeply, toothed AA, AV; style 1.



Corolla absent.

Leaves compound; flowers in short dense spikes PS.

Stamens 4 S, erect; flowers hermaphrodite; calyx dark purple.



Stamens 20-30 becoming pendulous PS; flowers usually monœctous; calyx light green, seldom tinged with purple.



IV. *Geum* L., p. 56.
Avena.

VI. *Potentilla* L., p. 57.
Potentil.

VII. *Fragaria* L., p. 58.
Strawberry.

V. *Comarum* L., p. 57.
Comarum.

III. *Dryas* L., p. 56.
Dryas.

II. *Spiræa* L., p. 56.
Spiræa.

VIII. *Agrimonía* L., p. 58.
Agrimony.

XI. *Alchemilla* L., p. 59.
Alchemil.

XII. *Sanguisorba* L., p. 59.
Sanguisorb.

XIII. *Poterium* L., p. 59.
Poterium.

I. *Prunus* L.¹ *Prunus*.—(Fig. P, p. 54.)

Fruit
glaucous.

Branches
thorny
SP.

Branches very thorny SP, black; flowers appear before leaves; fruit
blue-black; 3-8 ft. [Blackthorn; Whitethorn.]

Branches less thorny, brown; flowers and leaves appear together; fruit usually *pale yellow*; 6-15 ft.

Branches
not thorny,
brown; flowers
and leaves appear
together; fruit
yellow or purple;
6-20 ft.

Branches less thorny, brown; flowers and leaves appear together; fruit yellow or purple;

Flowers in long racemes
PA;



leaves toothed; fruit black, bitter;
10-25 ft.

Fruit
not
glaucous.

Flowers in *almost sessile*
umbels; 2 glands usually
present at base of leaf-
blade *g*, A.

Leaves *hairy* beneath; petiole long; fruit crimson
or black, sweet; 15-30 ft.



Leaves *glabrous*; petiole short; fruit red, acid; 10-20 ft.

II. *Spiræa* L. *Spiræa*.—

Shrubby; leaves *simple*, toothed; flowers pink; carpels usually 5; 2-5 ft.

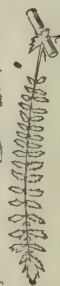
Plant *herbaceous*;
leaves *compound*;
flowers *creamy-*
white.

Leaflets 11-15, *very unequal* UL; carpels
5-8, twisted S; *no tubers*; flowers
sweet-scented; 2-3 ft.



[Queen of the Meadows.]

Leaflets 31-41, *almost equal* F;
carpels 5-12, straight SF;
roots *with tubers*; 1-2 ft.

III. *Dryas* L. *Dryas*.—

Stems much branched, prostrate; flowers large; calyx 8-10 lobed; petals 8-10; awn of fruit feathery and
more than 1 in. in length; 1-4 in.

IV. *Geum* L.¹ *Geum*.—(Fig. G, p. 55.)

Flowers yellow, small, erect; calyx
green, *reflexed* after flowering U;



Flowers dull purple, large, drooping;
calyx *erect* after flowering R;



style in fruit hooked, upper $\frac{1}{4}$ silky; 1-3 ft.

[Herb Bennet.]

1. *P. spinosa* L. ✠

Sloe. VC.
Hedges; open woods; Mar.-
Apr. P.

2. *P. institia* L. ✠

Bullace.

Hedges: Apr.-May. P.

*3. *P. domestica* L. ✠

Wild Plum. R.

Hedges: Apr.-May. P.

4. *P. Padus* L. ✠

Bird Cherry.

Open woods and cultivated:
May-June. P.

5. *P. avium* L. ✠

Gean.

Woods: May-June. P.

6. *P. Cerasus* L. ✠

Cherry.

Woods; hedges: May-June. P.

*1. *S. salicifolia* L.

Willow-leaved Spiræa.

Hedges; escape: June-July. P.

2. *S. Ulmaria* L. ✠

Meadow-sweet. C.

Damp meadows and by water:
June-Sept. P.

3. *S. Filipendula* L. ✠

Dropwort.

Meadows and open woods: June-
Aug. P.

1. *D. octopetala* L.

White Dryas. LOC.

Mountains: June-July. P.

1. *G. urbanum* L. ✠

Wood Anem. VC.

Hedges; woods: June-Aug. P.

2. *G. rivale* L.

Water Anem.

Damp woods; shady ditches:
June-July. P.

V. Comarum L. *Comarum*.—(Figs C. CP, p. 55.)

Stem decumbent, rooting; receptacle spongy; 8-20 in.

VI. Potentilla L. *Potentil.*.—(Figs P, PR, p. 55.)

Plant *shrubby*; leaflets 5, narrow, entire, hairy; flowers solitary, large, yellow; 2-4 ft.

Leaves *pinnate*.

Plant *erect*, woody at base; leaflets 5-7, hairy; flowers *white*; 8-20 in.

Plant *herbaceous*.

Stems *prostrate*, with creeping runners rooting at nodes; leaflets 12-20, silky beneath; flowers *yellow*; 3-12 in.



Flowers *white*; stem procumbent; leaflets *toothed almost all round* PF; carpels many, smooth; 2-6 in.



[Barren Strawberry.]

Stem *woody at base*; leaflets *toothed at apex*; carpels 5-7; 2-6 in.

Flowers *yellow*.

Stem *erect, herbaceous*; leaflets *coarsely toothed*; carpels wrinkled; 6-12 in.



Leaves *green above, white and downy beneath* PA; leaflets recurved at margin; 4-18 in.



Stems slender, prostrate, rooting RE;

leaflets toothed all round; flowers solitary; 6-18 in.

Leaves *green on both surfaces*.

Stems erect or prostrate, not rooting.



Stipules of upper leaves *resembling leaflets* T; petals 4, rarely 5; 6-10 in.

Stipules all *small, narrow* V; petals 5; 2-8 in.



1. Belonging to this genus are the following cultivated plants:—*P. Armeniaca* L. [Apricot], *P. Lauro-cerasus* L. [Laurel], *P. lusitanicus* L. [Portugal Laurel], and *P. Mahaleb* L. [Damson]. Closely allied is the genus *Amigdalus* including *A. communis* L. [Almond], and *A. Persica* L. [Peach].—
2. *P. domestica* L. is alien but now established.—3. A hybrid of the two species [*G. intermedium* Ehrh.] is sometimes found. Its flowers are erect or drooping, larger than in *G. urbanum*, more yellowish than in *G. rivale*.—4. A hybrid between *P. reptans* and *P. Tormentilla* is known as *P. procumbens* Sibth.: stem procumbent, rooting; stipules entire or deeply 3-lobed; petals 4-5.

1. **C. palustre** L. [Marsh *Cinquefoil*.]

Marshes; bogs: June-July. P.

1. **P. fruticosum** L.

Shrubby Potentil. R. Shady, stony places: June-July. P.

2. **P. rupestris** L.

Rock Potentil. VR. Calcareous rocks: May-June. P.

3. **P. Anserina** L. [Silver *Weed*.] VC.

Roadsides: June-Aug. P.

4. **P. Fragariastrum**

Ehrh. *Strawberry-leaved Potentil.* C. Woods and banks: Mar.-May. P.

5. **P. Sibbaldi** Hall

Sibbaldia. Loc. Mountains: July-Aug. P.

*6. **P. norvegica** L.

Norwegian Potentil. Loc. Wastelamp places: July-Aug. A

7. **P. argentea** L.

Hoary Potentil. Dry gravelly places: June-Aug. P.

8. **P. reptans** L. [Cinque-*foil*.] C.

Pastures; hedges: June-Sept. P.

9. **P. Tormentilla** Sibth.

Tormentil. VC. Heaths; moors; dry pastures: June-Sept. P.

10. **P. verna** L.

Spring Potentil. Loc. Hilly pastures: Apr.-May. P.

VII. *Fragaria* L. *Strawberry*. — (Figs. F, FV, p. 55.)

Hairs adpressed on peduncle and pedicels FV; receptacle with carpels to its base; 4-12 in.

Calyx spreading or reflexed FV, E.



1. *F. vesca* L. $\frac{1}{4}$

Strawberry. VC.
Woods and hedges: May-June. P.

Hairs spreading on peduncle and pedicels E; receptacle without carpels at its base; 4-16 in.



*2. *F. elatior* Ehrh.

Hautbois Strawberry. R.
Woods: May-July. P.

VIII. *Agrimonia* L. *Agrimony*. — (Figs. AE, A, p. 55.)

Leaves greyish-green beneath; leaflets 5-9; calyx persistent, bearing hooked spines when fruit is ripe; 1-2 ft.

1. *A. Eupatoria* L. $\frac{1}{4}$

Agrimony.
Roadsides; hedges: June-July. P.

IX. *Rosa* L. *Rose*. — (Fig. RO, p. 54.) This genus includes many types very difficult to determine, even for those who have made of it a special study. Only the chief species are here given—the varieties in the foot-note are often classified as species.

Prickles straight T, P.



Leaflets simply toothed RP, glabrous;



prickles stout T; flowers white, seldom pink; 6-24 in.

1. *R. spinosissima* L.

Burnet or Scotch Rose.
Sand dunes; sandy or chalky hillsides near sea: May-July. P.

Leaflets twice toothed RT, hairs glandular;



prickles slender P; flowers rose; 3-8 ft.

2. *R. tomentosa* Sm.

Downy-leaved Rose.
Hedges and thickets: June-July. P.

Prickles curved C.

Sepals almost entire RA; leaves glabrous; styles united; flowers white; 3-6 ft.



3. *R. arvensis* Huds. $\frac{1}{4}$

Trailing Rose. C.
Hedges; woods: June-Aug. P.

Sepals deeply divided RC.



Leaflets simply toothed CA; no glandular hairs; flowers fragrant, white or pink; 3-9 ft.



4. *R. canina* L. $\frac{1}{4}$

Dog Rose. C.
Hedges; woods: June-July. P.



Leaflets twice toothed RU; under surface with glandular hairs, rust-coloured, apple-like scent; flowers small, rose; 3-6 ft.



5. *R. rubiginosa* L. $\frac{1}{4}$

Sweet Briar.
Hedges; thickets: June-July. P.

X. *Rubus* L. *Rubus*.—(Fig. RU, p. 54.) The remarks with regard to the genus *Rosa* are equally applicable here.

Leaves white beneath; plant a shrub.

Lateral leaflets sessile I; flowers white; ripe fruits red; 3-6 ft.



Lateral leaflets shortly stalked RF; flowers white or pink; ripe fruits black, not glaucous; 3-6 ft. [Blackberry.]



Leaves green beneath; flowers white.

Sepals erect, adpressed on fruits RC; plant shrubby;



leaves glabrous; fruit glaucous, bluish-black; 2-6 ft.

Sepals reflexed below fruits S; plant herbaceous;



leaves with glandular hairs; fruit red, carpels few; 6-24 in.

Plant herbaceous; leaves simple, toothed or lobed; flowers large, solitary, white; fruit red, afterwards yellow; 6-12 in. [Knotberry.]

XI. *Alchemilla* L. *Alchemilla*.—

Plant an annual; leaves deeply tri-fid, petiole shorter than lamina AA; flowers yellowish-green in sessile, axillary heads; 2-4 in.



Plant a perennial; petiole long AV; flowers yellowish green.



Leaves rounded, plaited, lobes broad, green, toothed AV; flowers in loose panicles; 4-16 in.

Leaves digitate, white and silvery beneath, toothed; flowers in interrupted spikes; 3-9 in.

XII. *Sanguisorba* L. *Sanguisorba*.—(Fig. S, p. 55.)

Leaves glabrous; leaflets 5-15, toothed; stem angular; 1-3 ft.

XIII. *Poterium* L. *Poterium*.—(Fig. PS, p. 55.)

Leaflets 11-15, glabrous; calyx wings in fruit 4, smooth; 6-18 in. [Lesser Burnet.]

Plant larger; calyx wings deeply pitted, more pronounced; 6-18 in.

1. *R. idæus* L. ♀

Raspberry.
Damp woods: June-Aug. P.

2. *R. fruticosus* L. ♀
Bramble VC.

Hedges; woods: July-Sept. P.

3. *R. cæsius* L. s.

Dewberry.

Open, stony places: July-Sept. P.

4. *R. saxatilis* L.

Stone Bramble.

Stony places, July-Sept. P.

5. *R. Chamæmorus* L.

Cloudberry.

Turf-bogs: July-Aug. P.

1. *A. arvensis* Scop.

Parsley Piert. C.

Dry fields; roadsides: May-Aug.

2. *A. vulgaris* L.

Common Lady's Mantle.

Moist shady places: June-Sept.

3. *A. alpina* L.

Alpine Lady's Mantle.

Mountains: June-Aug. P.

1. *S. officinalis* L. ♀

Great Burnet.

Moist meadows: June-Aug. P.

1. *P. Sanguisorba* L. ♀

Salad Burnet.

Dry pastures: June-Aug. P.

*2. *P. polygamum* W.

and K.

Fodder Burnet.

Dry waste places: June-Aug. P.

1. *Var. odorata* Mill.: 2-3 ft; calyx-tube more or less furrowed; leaves with glandular hairs and resinous odour, R.—2. *Var. stylosa* Desv. has characteristics intermediate between those of *R. arvensis* and *R. cæsius*, R.—3. *Var. dumetorum* Thunb.: leaves soft, grey-green, C.—4. *Var. micrantha* Sm.: leaves faintly aromatic, styles almost glabrous.—5. *Var. dumetorum* W. and N.: terminal leaflet heart-shaped at base; fruit black, shiny.

XIV. *Cratægus* L. *Hawthorn*.—(Fig. CR, p. 54.)

Plant glabrous, thorny; leaf-base narrow; flowers white, sometimes pink; style 1, CO, sometimes 2-3; haws red, globular or ovoid; 6-50 ft.
[May; Whitethorn.]

XV. *Mespilus* L. *Medlar*.—(Figs. M, MG, p. 54.)

Flowers solitary, white; fruit hairy; branches thorny when wild; 6-10 ft.



XVI. *Pyrus* L. *Pyrus*.—

Flowers in a simple raceme P; styles 5; leaves simple, toothed M, P.

Styles united at base; flowers almost in an umbel M;

Styles quite free; flowers in a short raceme P;

fruit depressed above and below; 6-30 ft.

Leaves pinnate AU.



Flowers in a branched raceme (Fig. SA, p. 54); styles usually 3, seldom 5.

Fruit pear-shaped D;

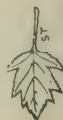


buds glabrous, gummy.

Fruit globular A;



buds very hairy, whitish; 6-30 ft.
[Mountain Ash.]



Leaves lobed ST,
or
deeply toothed L.

Styles glabrous; leaves, except when young, not downy beneath; fruit oval, brown; 6-50 ft.



Styles very hairy at base; leaves white and downy beneath; fruit globular, red; 6-40 ft.



1. *C. Oxyacantha* L.¹
Hawthorn. VC.
Hedges; thickets: May-June. P.

1. *M. germanica* L.
Common Medlar. R.
Hedges; thickets: May-June. P.

1. *P. Malus* L. $\frac{1}{4}$
Crab-apple.
Hedges; woods: Apr-May. P.

2. *P. communis* L. $\frac{1}{4}$
Pear. R.
Hedges; woods; often an escape: Apr-May. P.

3. *P. domestica* Ehrh. $\frac{1}{4}$
Service Tree.
Cultivated: May-June. P.

4. *P. aucuparia* Cærtn. $\frac{1}{4}$
Rowan-tree.
Woods: May-June. P.

5. *P. terminalis* Ehrh. $\frac{1}{4}$
Wild Service Tree. LOC.
Woods: May-June. P.

6. *P. Aria* Ehrh.
Beam Tree.
Woods, calcareous soil: May-June. P.

1. *C. vulgaris* Lindl.
Cotoneaster. VR.
Limestone clif. May-June. P.

XVII. *Cotoneaster* Med. *Cotoneaster*.—(Fig. CO, p. 54.)

Branches not thorny; calyx persistent; flowers small, pink, solitary or 2-5; fruit globular, red; 6-24 in.

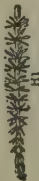
HALORAGACEÆ.

The species are all aquatic; their stems and leaves vary considerably according to whether they are submerged or aerial.

Leaves *finely pinnate* S, V, AL, below; calyx, petals and styles 4, stamens 4 or 8.

Leaves *entire* HI; calyx indistinct; petals absent; stamen and style 1.

I. *Myriophyllum* L. *Water Milfoil*.—



Flowers in *close axillary whorls* V; bracts pinnate, longer than flowers; plant submerged.

Flower-clusters *dis-*
tant S, AL, appear-
 ing above water;
 bracts entire, not
 longer than flowers.



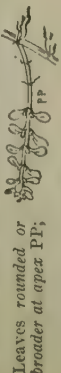
II. *Hippuris* L. *Mare's-tail*.—

Stem erect, unbranched, upper part aerial; flowers very small, solitary, axillary, green; anther reddish-brown.

LYTHRACEÆ.

This natural order is remarkable for the different forms of flowers in the same species. Sometimes the stamens are relatively more developed.

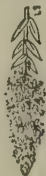
Leaves *oval or narrow* LH, LS; calyx tubular, furrowed; style long; fruit longer than broad.



Leaves *rounded or broader at apex* PP; calyx campanulate; style short, fruit globular.

I. *Lythrum* L. *Lythrum*.—

Flowers 3-10 in clusters arranged in whorled spikes LS, trimorphic;



Flowers *solitary*, axillary LH;



II. *Peplis* L. *Pephis*.—(Fig. PP, above.) Stem prostrate, creeping, rooting; sometimes floating; flowers solitary, axillary, pale rose; petals often absent; 3-8 in.

leaves heart-shaped at base; flowers rose or purple; 2-4 ft.

leaves linear; flowers pink; 4-12 in.

I. *Myriophyllum* L., p. 61.

Water Milfoil.

II. *Hippuris* L., p. 61.

Mare's-tail.

1. *M. verticillatum* L. *Whorled Water Milfoil*.
Ditches; ponds: June-Aug. P.

2. *M. spicatum* L. *Spiked Water Milfoil*. C.
Ditches; ponds: July-Aug. P.

3. *M. alternifolium* DC. *Ditches*; ponds: June-Aug. P.
1. *H. vulgaris* L. *Mare's-tail*.
Shallow water, ditches and marshes: June-July. P.

I. *Lythrum* L., p. 61.

Lythrum.

II. *Peplis* L., p. 61.

Pephis.

1. *L. Salicaria* L. *✠ Purple Loosestrife*.
River-banks: July-Sept. P.

2. *L. hyssopifolium* L. *✠ Hyssop Loosestrife*. R.
Stagnant ponds: June-Sept. A.

1. *P. Portula* L. *Water Purslane*.
Margin of ponds: July-Aug. A.

1. Var. *monogyna* Jacq.: young stems and calyx hairy; leaves more deeply cut; style one.—2. *P. Cydonia* L. *✠ Quince*: flowers solitary; petals large, rounded; fruit yellow; cultivated.

ONAGRACEÆ. Several species belonging to this N.O. are cultivated as ornamental plants.

Stamens 2; *petals* 2, cleft; flowers white or pinkish in raceme C; leaves opposite, petiolate.



I. *Circæa* L., p. 62.
Circæa.

Stamens 4; *petals* absent I;



flowers greenish; leaves glabrous, opposite I.

III. *Ludvigia* L., p. 62.
Ludvigia.

Stamens 8; *petals* 4.



Flowers yellow; seeds without pappus of hairs B.



Flowers rose or purple; seeds with pappus of hairs E.

II. *Enothera* L., p. 62.
Enothera.

IV. *Epilobium* L., p. 62.
Willow Herb.

I. *Circæa* L. *Circæa*.—

Flowers without bract at base of pedicel (Fig. C, above); leaves slightly toothed CL, [Enchanter's Nightshade.]



1. *C. lutea* L.
Common Circæa. C.
Moist woods: June-Aug. P.

Flowers with very small bract at base of pedicel (b, Fig. IN);



leaves coarsely toothed INT, often glossy; 4-16 in.



2. *C. alpina* L.
Alpine Circæa,
Shady places: June-Aug. P.

II. *Enothera* L. *Enothera*.—(Fig. B, above.)

Sepals 4, upper part free and reflexed; leaves opposite, entire or slightly toothed; fruit 4-valved.

Leaves ovate-lanceolate; capsule oblong, tapering towards apex; flowers yellow; 2-4 ft.

Leaves narrower; capsule longer, more cylindrical; flowers deep yellow changing to dull orange red; 2-3 ft.

*1. *E. biennis* L.
Evening Primrose. Loc.
Waste sandy places: July-Sept. B.

*2. *E. odorata* Jacq.
Loc.
Sandy places: July-Sept. B.

III. *Ludvigia* L. *Ludvigia*.—(Fig. I, above.)

Calyx persistent; stamens opposite sepals; plant aquatic; stem creeping and rooting in mud; 6-10 in.

1. *L. palustris* Ell.
Marsh Ludvigia. VR.
Marshes; pools: June-July. P.

IV. *Epilobium* L. *Willow-herb*.—

Corolla large, at least 2 cm. in diameter; stigma 4-lobed.



Style and stamens curved downwards ES; plant glabrous;

1. *E. angustifolium* L.
Rose-bay Willow-herb.
Moist banks and open woods: July-Aug. P.



Style and stamens erect H; plant hairy;

2. *E. hirsutum* L.
Great Willow-herb.
Sides of ditches and streams. July-Aug. P.

Stem
2-4 angled
R, T;
stigma)
entire,
club-shaped.

Stem
rounded or
without
distinct
angles.

Corolla
small,
less
than
1 cm. in
diameter.

Leaves sessile T;

Leaves petiolate R;



flowers rose; 1-2½ ft.

flowers pale rose, often with
darker veins; 1-2 ft.

Leaves sessile, narrow, entire or slightly toothed;
flowers rose-lilac; 6-18 in.

Stigma entire,
club-shaped P.



Leaves
with short
stalks.

Leaves toothed, glabrous and glossy; flowers
rose-purple; 4-12 in.

Leaves usually entire, tinged with red;
flowers pale rose; 2-4 in.

Leaves hoary, finely toothed,
alternate EP; stem hoary;
flowers rose or purple; 1-2 ft.



Leaves glabrous
or slightly
hoary, coarsely
toothed M;
stem glabrous
or with few
woolly hairs.

Leaves opposite
M; flowers
pale-purple;
6-24 in.



Stigma 4-lobed
PV in opened
flower.



3. *E. tetragonum* L.
Square-stalked Willow-
herb. C.
Wet ditches; damp places:
July-Aug. P.

4. *E. roseum* Schreb.
Pale Willow-herb.
Ditches; damp places: July-
Aug. P.

5. *E. palustre* L.
Marsh Willow-herb.
Marshes: July-Aug. P.

6. *E. alsinifolium* Vill.
Mountain Willow-herb.
Sides of mountain streams:
July-Aug. P.

7. *E. alpinum* Huds.
Alpine Willow-herb.
Sides of mountain streams:
July-Aug. P.

8. *E. parviflorum*
Schreb.
Hoary Willow-herb.
Wet places: July-Aug. P.

9. *E. montanum* L.
Broad-leaved Willow-herb.
VC.
Damp shady places: June-
July. P.

10. *E. lanceolatum* S. and
M.
Spear-leaved Willow-herb.
R.
Dry places: July-Aug. P.

10. *E. lanceolatum* S. and
M.
Spear-leaved Willow-herb.
R.
Dry places: July-Aug. P.

CUCURBITACEÆ. Several species are cultivated, e.g. Cucumber, Melon, Pumpkin, Vegetable Marrow.

I. Bryonia L. Bryony.—(Fig. BR, p. XXIV.)

Plant climbing by tendrils; leaves palmately lobed; flowers greenish-white, dioecious, berries red.
[White Bryony; Red Bryony.]

1. B. dioica Jacq.
Common Bryony.
Hedges; thickets: May-Sept. P.

TAMARICACEÆ. Only one species, and that naturalised, is admitted in the British flora.

I. Tamarix L. Tamarisc.—

Leaves minute, acute, adpressed; flowers pinkish-white, small; sepals and petals 4-5, stamens as many or twice as many; ovary 1-celled, styles 3, rarely 2 or 4; fruit 3-valved; 3-6 ft.

1. T. gallica L.
Common Tamarisc. Loc.
Sandy places: July-Sept. P.

PORTULACÆÆ.

Flowers yellow; stamens 6-15; leaves opposite or alternate, form a rosette round flowers O; fruit opens transversely.

Flowers { Stamens 3; leaves opposite F; corolla cleft on one side.
white;
fruit

3-valved. { Stamens 5; 2 upper stem leaves connate below flowers; petals 5, distinct.

I. Portulaca L. Portulaca.—

Stem decumbent, often reddish; leaves fleshy, glabrous, short hairs in axil; 4-12 in.

II. Montia L. Montia.—

Stems tufted, rigid; leaves entire, glabrous, slightly connate; seeds dull black.

[Water Chickweed.]

Stems sub-erect, flaccid; leaves free at base; seeds shining, brown.

III. Claytonia L.¹ Claytonia.—

Radical leaves oval, pointed at apex; flowers often solitary; petals bi-fid, sometimes pink.

Radical leaves broadly ovate, not strongly pointed at apex; flowers few in short raceme; petals notched.



I. Portulaca L., p. 64.
Portulaca.

II. Montia L., p. 64.
Montia.

III. Claytonia L., p. 64.
Claytonia.

***1. P. oleracea L. ♀**
Purslane. R.
Escape; cultivated ground;
June-Aug. A.

1. M. fontana L. ♀
Blinks.

Wet sandy places: Apr.-Aug. A.

2. M. lamprosperma
Cham.

Wet places: May-Aug. A.

***1. C. sibirica L. Loc.**
Stream-sides; waste places:
May-Aug. A.

***2. C. perfoliata Donn.**
Roadsides; waste places: Apr.-
June. A.

PARONYCHIACEÆ [ILLECEBRACEÆ].

The members of this N.O. usually have spreading or decumbent stems, and small flowers, the petals of which are either aborted or reduced to small filaments.

Leaves all alternate CL; stipules small, silvery;



flowers white; fruit a nut.

I. *Corrigola* L., p. 65.
Strapwort.

Leaves without stipules, connate A, SP;



flowers green; sepals 2, joined; styles 2.

II. *Scleranthus* L., p. 65.
Knave.

Leaves opposite.

Leaves with membranous stipules HH.

Sepals milky-white, thick, acute; flowers 3-6 in a cluster I.



III. *Illecebrum* L., p. 65.
Illecebrum.

Sepals green without, yellowish within; flowers many in a cluster HH.



IV. *Herniaria* L., p. 65.
Rupture-wort.

I. *Corrigola* L. *Strapwort.*—(Fig. CL, above.)

Stems many, prostrate; leaves narrow; flowers crowded in terminal cymes; 4-12 in.

II. *Scleranthus* L. *Knave.*—

Sepals obtuse with broad white margin, converging after flowering; flowers terminal (Fig. SP, above); 2-6 in.

Sepals acute, hardly margined white (about ½ mm.); a few flowers sometimes axillary (Fig. A, above); 2-6 in.

III. *Illecebrum* L. *Illecebrum.*—(Fig. I, above.)

Stems prostrate, slender; leaves numerous, oval; flowers shining, sessile, in numerous clusters; 2-10 in.

IV. *Herniaria* L. *Rupture-wort.*—



Plant glabrous, green G;

leaves glabrous; 2-8 in.

1. *H. glabra* L.
Smooth Rupture-wort. R.
Dry fields: July-Aug. A., B., or P.



Plant hairy, greyish HH;

leaves ciliate; 2-8 in.

*2. *H. hirsuta* L.
Hairy Rupture-wort. VR.
Dry fields: July-Aug. A. B. or P.

1. *C. littoralis* L.
Strapwort.

Sandy shores: July-Aug. A.

1. *S. perennis* L.
Perennial Knave. VR.

Sandy fields: June-Sept. P.

2. *S. annuus* L.
Annual Knave. C.

Fields; waste places: June-Sept. A or B.

1. *I. verticillatum* L. VR.

Sandy marshes: July-Aug. A, or B.

1. The two species of *Claytonia* are natives of NW. America, weeds now naturalised in England.

CRASSULACEÆ.

The members of this N. O. are *succulent plants*, their thick leaves storing enough water to enable them to withstand a drought on rocky and dry soil.

Stamens 3-4; plant very small; flowers white, sessile TM; carpels contracted transversely T.

Stamens twice as many as petals, half of them sometimes without anthers.

Petals 6-20 ST; scale at base of carpel toothed;

Petals free, spreading.

Petals 5, rarely 4, 6 or 8; scale at base of carpel entire or cleft;

Petals 5 united; corolla tubular; scale at base of carpel entire; flowers yellowish-green.

I. **Sedum** L. *Stonerop.*—Leaves coarsely toothed TE; flowers 5-partite, perfect, rose or purple; roots swollen, 1-2 ft.

Leaves flat, broad TE.

Leaves slightly toothed; flowers 4-partite, *diœcious*, yellow tinged purple; 6-18 in. [Midsummer-men.]

Flowering stems 1-3 in.; leaves blunt.

Sepals prolonged at base A;



leaves short, nearly globular AC; 3-10 in. [Wall-pepper; Ginger.]



Sepals not prolonged at base BO;



leaves several times longer than thick; 3-6 in.

Flowers y. flow.

Flowering stems 6 in. or more; leaves acute.

Inflorescence flattened R.

Leaves cylindrical, prolonged at base, crowded E, R; 6-12 in. [A garden form has reflexed cauline leaves.]



Inflorescence rounded at top; leaves elongated, flattened, prolonged at base; 6-10 in.



flowers rose, striated.

flowers rose, white or yellow.

III. **Tillæa** L., p. 67. *Tillæa.*

II. **Sempervivum** L., p. 67. *Houseleek.*

I. **Sedum** L., p. 66. *Stonerop.*

IV. **Cotyledon** L., p. 67. *Cotyledon.*

1. **S. Telephium** L. *✠* *Orpine.*

Hedges; thickets: July-Aug. P.

2. **S. roseum** Scop.

Rose-root. Damp rocks; mountains: May-Aug. P.

3. **S. acre** L.

Biting Stonerop. C. Walls; dry places: June-July. P.

*4. **S. sexangulare** L. *Tasteless Stonerop.* VR. Old walls: July-Aug. P.

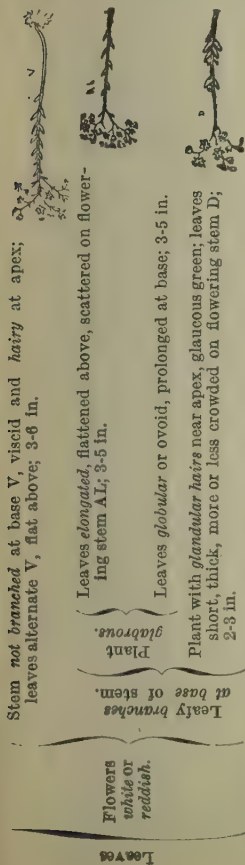
5. **S. rupestre** L.

Rock Stonerop. R. Rocks: June-July. P.

*6. **S. reflexum** L. *✠* *Reflex-leaved Stonerop.* R. Rocks; walls; an escape: June-July. P.

7. **S. Forsterianum** Sm. *Small ivy-like Stonerop.* Loc. Damp rocks: June-July. P.

thick and narrow AC, SB.



8. *S. villosum* L.
Hairy Stonecrop.
Peat bogs, mountains: June-July. A or B.

9. *S. album* L. ✕
White Stonecrop.
Walls; rocks: June-July. P.

10. *S. anglicum* Huds.
English Stonecrop.
Rocks near sea: June-Aug. P.

11. *S. dasyphyllum* L.
Thick-leaved Stonecrop. R.
Old walls: June-July. P.

12. *Sempervivum* L. *Houseleek.*—(Fig. ST, p. 66.)
Stem hairy, viscid; barren branches bear rosette of leaves at apex; leaves fleshy, ciliate, green, tipped purple; 1-2 ft.

13. *Tillæa* L. *Tillæa.*—(Figs. TM, T, p. 66.)
Stems reddish, decumbent, tufted; leaves small, connate; flowers very small; 1-2 in.

IV. *Cotyledon* L. *Cotyledon.*—
Leaves chiefly radical, fleshy, peltate, crenate; flowering stem erect; flowers pendulous in long raceme; 4-12 in.
The various species are often cultivated for their edible fruits.

RIBESIACEÆ.
I. *Ribes* L. *Ribes.*—
Branches thorny; leaves hairy U; petals green; fruit smooth, yellow; 2-4 ft.

Branches not thorny; leaves 3-5 lobed; peduncles many flowered.
Racemes pendulous; flowers perfect.
Calyx glabrous R; flowers greenish-yellow; fruit red; 3-5 ft.
Calyx hairy; flowers greenish, tinged red within; fruit black; leaves with glandular dots, strongly scented; 3-5 ft.
Racemes erect; flowers dioecious, greenish-yellow; calyx glabrous; fruit red, tasteless; 4-5 ft.

*1. *S. tectorum* L. ✕
Houseleek.
Rocks; old walls: July-Aug. P.

1. *T. muscosa* L.
Mossy Tillæa. R.
Barren sandy heaths: June-July. R.

1. *C. Umbilicus* L.
Navelwort.
Rocks; walls: June-Aug. P.

1. *R. Uva-crispa* L. ✕
Gooseberry.
Hedges: Apr.-May. P.

2. *R. rubrum* L. ✕
Red Currant.
Rocky woods: Apr.-May. P.

3. *R. nigrum* L. ✕
Black Currant.
Shady damp thickets and woods: Apr.-May. P.

4. *R. alpinum* L.
Mountain Currant. R.
Woods: Apr.-May. P.

1. Var. *Grossularia* L. ✕, is often cultivated. Its leaves are almost glabrous, shining beneath; its fruit is hispid.

SAXIFRAGACEÆ.

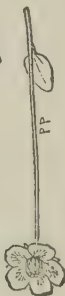
Ornamental plants belonging to this N.O. include the Hydrangea, Syringa or Mock Orange, and Deutzia.

Corolla absent; sepals 4, stamens 8, stigmas 2 CH.

Corolla present,
GR, PP,
sepals and petals
5.

Stamens 10, stigmas 2 GR.

Stamens 5 with anthers, 5 modified as scales
bearing glandular filaments PP; stigmas 4.



I. Saxifraga L. Saxifrage.—(Fig. GR, above.)

Plant an *annual*; root-stock without small bulbs TR;
lower leaves 3-lobed; flowers solitary; 2-4 in.

Radical
leaves
not in
close
rosette
TR, G;
flowers
white.

Flowering
stem leafy
TR, G.

Plant a
perennial.

Plant forming
bulbs.

Root-stock with many small bulbs G; lower
leaves crenate; peduncle several flow-
ered; 6-12 in.

Small bulbs in upper leaf axils; leaves more broadly lobed;
peduncle 1-3 flowered; 2-4 in.

Plant glabrous *seldom forming bulbs*; stem decumbent, rooting;
leaves 3-5 lobed; peduncle 1-3 flowered; 1-4 in.

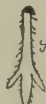
Flowering stem *leafless*; radical leaves toothed; flowers small in dense terminal cyme; 3-6 in.

Flowering
stem leafy.

Flowers
white.

Leaves usually 3-lobed, ciliate SC; tufts dense;
barren shoots very short; sepals obtuse; 4-8 in.

Leaves more acute, less frequently lobed, tufts loose; barren shoots
2-3 in; sepals acute; 4-12 in. ♀



II. Chrysosplenium. L., p. 69. *Chrysosplene.*

I. *Saxifraga* L., p. 68.
Saxifrage.

III. *Parnassia* L., p. 69.
Parnassia.

1. *S. tridactylites* L.
Rue-leaved Saxifrage.
Walls; dry fields: Apr.-July. A.

2. *S. granulata* L.
Meadow Saxifrage.
Meadows; banks: May-June. P.

3. *S. cernua* L.
Drooping Saxifrage. VR.
Mountains; July-Aug. P.

4. *S. rivularis* L.
Brook Saxifrage. R.
Damp places, mountains;
July-Aug. P.

5. *S. nivalis* L.
Alpine Saxifrage.
Mountain rocks: July-Aug. P.

6. *S. cespitosa* L.
Tufted Saxifrage. VR.
Highest mountains: May-June.
P.

7. *S. hypnoides* L.
Mossy Saxifrage.
Hilly districts: May-July. P.

8. *S. stellaris* L.
Star Saxifrage.
Damp rocks; hills and mountains: July-Aug. P.
9. *S. umbrosa* L.
London Pride.
Mountains: June-July. P.
10. *S. Geum* L.
Kidney Saxifrage.
Mountains: June-July. P.
11. *S. aizoides* L.
Yellow Saxifrage.
Wet rocks, mountains: June-Sept. P.
12. *S. Hirculus* L. VR.
Marsh Saxifrage.
Wet moors: July-Aug. P.
13. *S. oppositifolia* L.
Purple Saxifrage.
Damp places, high mountains: Apr.-June. P.

- Flowering stem leafless; leaves coarsely toothed; petals with 2 orange spots above base; 2-8 in.
- Leaves very coarsely toothed, narrow at base; petiole broad, flat, ciliate; 6-12 in.
[St. Patrick's Cabbage; None so pretty.]
- Leaves toothed, heart-shaped at base; petiole longer, less flattened, hairy; 6-12 in.
- Peduncle several flowered; calyx slightly adherent to ovary, spreading; 4-6 in.
- Flowers usually solitary; calyx free, reflexed; petals dotted with red; 4-8 in.
- Stem creeping; branches decumbent; leaves all opposite forming 4 rows, small, crowded, ciliate; flowers many, solitary, axillary, large, purple; 4-8 in.

Radical leaves in close rosette.

Flowers pink; flowering stem not leafy.

Flowers yellow; flowering stem leafy.

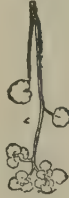
Leaves opposite, lower ones with short petioles O;



stem erect, 4-angled; 4-6 in.

Flowers small, yellow in compact clusters surrounded by leaves usually greenish yellow.

Leaves alternate, lower ones with long petioles A;



stem decumbent, 3-angled; 4-6 in.
[Golden Saxifrage.]

1. *C. oppositifolium* L.
Golden Saxifrage. C.
Damp shady places: Apr.-July. P.

2. *C. alternifolium* L. ✠
Alternate-leaved Chrysosplene. LOC.
Damp shady places: Apr.-July. P.

III. *Parnassia* L. *Parnassia*.—(Fig. PP, p. 68.)

Radical leaves entire, in a rosette; cauline leaf usually one, oval, amplexicaul; flowers solitary, white, $\frac{1}{2}$ -1 in across; scales white, glands yellow; 4-8 in.

1. *P. palustris* L.
Grass of Parnassus.
Marshes; bogs: July-Sept. P.

UMBELLIFERÆ.

The members of this N.O. are usually difficult to determine. It is therefore necessary to choose plants with well-formed or ripe fruits. Many of the species contain useful essences, e.g. Aniseed, Angelica, Fennel, Coriander; others contain poisonous organic alkalies, e.g. Hemlock, Water Hemlock.



Leaves simple or spinous.
[Examples: F, SE, H, E, R.]

GROUP 1, p. 71.



Fruit hispid or covered with bristles.
[Examples: P, D, AV, M, T.]

GROUP 2, p. 71.

Flowers yellow, yellowish or greenish-yellow.

GROUP 3, p. 72.

Involucre and involucre absent.

GROUP 4, p. 72.

Flowers white, pink or green.
Involucre and involucre present, or one of them.

Lower leaves completely divided once.
[Examples: L, F, V.]



GROUP 5, p. 73.

Fruit smooth and not hairy.

Lower leaves completely divided two or more times.
[Examples: PE, PA.]



Fruit winged A.
[A shows the winged fruit cut transversely.]



GROUP 6, p. 73.



Fruit not winged.

GROUP 7, p. 74.

Leaves compound.

GROUP 1.—

Leaves spinous; flowers in dense umbel E; plant glabrous.

Leaves palmately lobed SE; umbel irregular S. { Bracts small.

Leaves entire or nearly so. { Bracts large and leaflike.

Leaves peltate, crenate H; flowers white; plant aquatic.

Leaves entire; flowers yellow; fruit furrowed; plant not usually aquatic.

GROUP 2.—

Fruit with a long beak P; umbel of 2-3 rays.

Fruit hairy. { Fruit without long beak.

Fruit flattened T, H.

Fruit with erect stiff hairs and a thick yellowish border T; umbels with 8-10 rays.

Fruit with a thin border H; umbels with 15-20 rays. [See XXVI. *Heracleum*.]

Fruit oval, not margined M; bracts 0-2, or many.

Fruit not ribbed pointed beak AV; beak smooth.

Fruit covered with bristles. { Bracts deeply divided DC; Bracts entire. { Bristles arranged regularly C.

Bristles arranged irregularly, slightly hooked TA.



I. *Eryngium* L., p. 75.
Eryngo.

II. *Sanicula* L., p. 75.
Sanicle.

III. *Astrantia* L., p. 75.
Astrantia.

V. *Hydrocotyle* L., p. 76.
Pennywort.

IV. *Bupleurum* L., p. 76.
Buplever.

VI. *Scandix* L., p. 76.
Scandia.

VII. *Tordylium* L., p. 76.
Hartwort.

VIII. *Seseli* L., p. 76.
Seseli.

IX. *Anthriscus* Bernh., p. 76.
Anthriscus.

X. *Daucus* L., p. 76.
Carrot.

XI. *Caucalis* L., p. 77.
Caucalis.

XII. *Torilis* Adans., p. 77.
Torilis.

1. Young umbels should be examined as the bracts forming the involucre or involucre sometimes fall early.

GROUP 3.—

Leaves several times *trifoliate*; segments entire. [See XXVIII. *Peucedanum*.

Leaves hairy;
fruit flattened.

Leaves *pinnate* PA; leaflets sharply toothed or lobed.



XIII. **Pastinaca.** L.,
p. 77.
Parsnip.

Leaflets with thread-like segments F;

bracts absent.



XIV. *Foeniculum* Hill,
p. 77.
Fennel.

Leaves
glabrous or
nearly so;
fruit not
flattened.

Leaflets flat,
more or
less broad;
involucre 1-3
bracts.

Calyx-teeth 5, acute
Leaves round
acute Sl.
Leaf smooth
greenish-
wide PE



XV. Silaus Bernh.,
p. 77.

XVI. *Petroselinum*
Hill, p. 77.

XVII. *Smyrnum* L.
p. 77.
Smurnium.

Flowers greenish-white; petals entire A(4); plant very aromatic.

Leaf segments
narrow.

Fruit *oblong* or longer than broad. [See XLII. Carum.]
Fruit *ovoid* or broader than long; flowers *dioecious*.



XVIII. *Apium* L., p. 73.
Apium.

XX. *Apinella* Neck,
p. 78.

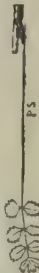
Flowers
white
or
pinkish.

Leaflets broad.

Lower leaves pinnate
PM. PS.



Lower leaves *bilternate* \mathcal{A} or *tri-ternate*.



XXI. *Pimpinella* L.,
p. 73.
Pimpinell.

XXII. *Ægopodium* L.,
p. 78.
(Goutweed.)

GROUP 5.—

Leaves trifoliate; leaflets 6-10 times longer than broad FR; margin cartilaginous;



pistil or stamens often aborted.

Leaf segments narrow, thread-like V,



apparently whorled. [See Carum verticillatum, p. 81.]

Bracts divided into 3-5 narrow segments. [See XIX. Ammi.]

Petals on circumference of umbel larger than the rest; leaves hispid; fruit flattened at margin H.



Leaf divisions 1-4 times longer than broad.

Petals all equal.

Plant aquatic.



Petals notched SA; calyx-teeth 5;

lower leaves longer than 6 in.



Petals entire HN; calyx indistinct;

lower leaves shorter than 4 in. [See XVIII. Apium.]

GROUP 6.—

Stem hollow, almost smooth, aromatic; base of leaf broadly sheathed AS; fruit 4-winged A.



Calyx indistinct; ribs fine.

Calyx-teeth 5, minute; ribs thick.



XXXI. Angelica L., p. 79. Angelica.

XXXII. Archangelica Hoffm., p. 79. Archangelica.

Stem solid, furrowed, distinctly angular; leaflets deeply cut SC; fruit 4-winged (S, section of fruit).



XXXIII. Selinum L., p. 80. Selinum.

Bracts lobed; segments 3-5, narrow.

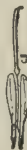
Involucel of 2-3 bracts longer than umbellule
CY, reflexed towards



circumference of umbel.
[All rays but one are cut in
Fig. OY.]

Plant submerged. [See XVIII. Apium.]

Chervil odour; umbels sessile; fruit long CE.
[See Charophyllum sativum, p. 78.]



Under-
ground
part not
a tuber.

Sepals indistinct.
Flowers white or pink.

Bracts of involucre entire or absent.

Involucel
of bracts
shorter than
umbellule.

Plant not submerged.

Umbels not sessile.

Leaf-segments
not fine.

Fruit not more
than $\frac{1}{4}$ in.
long.

Fruit almost as broad as long
CM; ribs prominent.
[All rays but one are
cut in Fig. CM.]



Fruit $\frac{1}{2}$ -1 in. long; involucre absent.

Fruit much longer than broad
AS, almost smooth.



Involucre of 5-8 bracts; leaf-segments very narrow B.



Underground
part a tuber.

Involucre of 0-3 bracts; leaf-segments narrow CD.



Flowers greenish-white; bracts of involucre reflexed; leaves thick, fleshy; segments
narrow CRI.



XIX. Ammi L.,
p. 78.
Ammi.

XLI. Æthusa L.,
p. 81.
Food's Parsley.

XXX. Meum Hill,
p. 79.
Spagel.



Petals acute; leaf-segments
many more
or less fine
ME.
Petals notched, apex inflexed; leaf segments longer.
[See XLII. Carum].

XXIV. Myrrhis Scop.
p. 78.
Cicely.

XL. Conium L.,
p. 81.
Henlock.

XXIII. Charophyllum
L., p. 78.
Chervil.

XLII. Carum L.,
p. 81.
Carum.

XLIII. Conopodium
Koch, p. 81.
Conopodium.

XXIX. Crithmum
L., p. 79.
Samphire.

- XXXIV. *Cicuta* L. p. 80.
Cowbane.
- XXXV. *Coriandrum*
 L., p. 80.
Coriander.
- XXXVI. *Physospermum*
 Cuss., p. 80.
Physospermum.
- XXXVII. *Enanthe* L.,
 p. 80.
Enanth.
- XXXVIII. *Peucedanum*
 L., p. 81.
Peucedan.
- XXXIX. *Ligusticum*
 L., p. 81.
Lovage.
- I. *Eryngium* L. *Eryngo*.—(Fig. E, p. 71.)

Fruit more or less globular.	Fruit not bladder- like.	Sepals large, membranous; involucre absent or bracts 1-2; involucre of many bracts.
------------------------------------	--------------------------------	---
- Calyx teeth large; involucre absent; involucre of few, narrow bracts.
- Fruit bladder-like; seed free, 1 in each chamber; involucre and involucre present.
- Fruit longer than broad, not flattened; sepals increasing in size after flowering; involucre absent or falling early.
- Fruit more or less flattened; calyx-teeth small; involucre of many bracts.

Margin of fruit thin, flattened; ribs 3, prominent.	Ribs 5, prominent, acute, almost winged.
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- I. *Eryngium* L. *Eryngo*.—(Fig. E, p. 71.)

Cauline leaves amplexicaul.	Flowers blue; leaves of involucre broad and lobed; radical leaves petiolate, rounded, broadly 3-lobed; plant glaucous, sometimes bluish at apex, 1-2 ft. [Sea Holly.]
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- Flowers bluish-white; leaves of involucre narrow, pinnately toothed; radical leaves petiolate, pinnately lobed; plant pale green; 1-2 ft.
- II. *Sanicula* L. *Sanicle*.—(Figs. S, SE, p. 71.)
- Leaves all radical, 3-5 lobed, glabrous or ciliate; flowers pinkish-white; fruit covered with hooked prickles; 1-2 ft.
- III. *Astrantia* L. *Astrantia*.—
- Leaves 5-7 lobed, acutely pointed; petals pinkish white not longer than calyx-teeth; bracts entire, yellowish-white tinged with pink; flowers often unisexual; 1-3 ft.
- *1. *A. major* L.
Larger Astrantia. VR.
 Woods an escape; June-Aug. P.
1. *S. europæa* L. ✕
Wood Sanicle. P
 Woods; June-July.
2. *E. campestre* L. ✕
Field Eryngo. VR.
 Waste places; July-Aug. P.

IV. *Bupleurum* L. *Buplever*.—

Leaves oval, petiolate R;



bracts of involucrel unequal, yellow within; 8-20 in. [Throw-wax.]

Leaves
narrow,
grass-like,
not petiolate
F, T.

Involucrel shorter than flowers;



umbel 4-10 rayed F; upper leaves recurved; 16-40 in.

Involucrel
longer than
flowers T.

Umbels terminal and axillary; flowers in partial
umbel 3-5, sessile; fruit granulate; 4-24 in.



Umbels terminal; flowers shortly petiolate; 1-10 in.]

V. *Hydrocotyle* L. *Pennywort*.—(Fig. H. p. 71.)

Stem prostrate, creeping, rooting, slender; umbels small, flowers 3-6; fruit spotted purple. [White-rot.]

VI. *Scandix* L. *Scandix*.—(Fig. P, p. 71.)

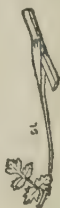
Leaves much divided; segments linear; flowers white; petals unequal; fruit 1-2 in. long; 4-16 in. [Venus's Comb.]

VII. *Tordylium* L. *Hartwort*.—(Fig. T, p. 71.)

Stem hispid; hairs reflexed; leaflets deeply toothed; flowers white, reddish outside; 1-3 ft.

VIII. *Seseli* L. *Seseli*.—(Fig. M, p. 71.)

Leaves bi-pinnate; leaflets toothed SL; leaf-base broad SL; flowers white, crowded; 1-3 ft.

IX. *Anthriscus* Bernh. *Anthriscus*.—(Fig. AV, p. 71.)

Leaves soft, hairy, bi- or tri-pinnate; rays of umbel very short; flowers white; 8-24 in.

X. *Daucus* L. *Carrot*.—(Figs. DC, D, p. 71.)

Leaves bi- or tri-
pinnate; leaflets
deeply lobed;
flowers white.

Stem with a zig-zag outline, covered with long white reflexed hairs; fruiting umbel only
slightly contracted; leaves slightly fleshy, hairy, shining above; 8-12 in.

Stem with a straight outline, hairy; fruiting umbel very contracted, bringing all fruits
close to the centre; leaves soft, hairy or glabrous, 16-32 in.



1. *B. rotundifolium* L. \star
Hare's-ear. LOC.
Corn-fields, calcareous soil:
June-July. A.

2. *B. falcatum* L. \star
Falcate Buplever. VR.
Shady roadside; Aug.-Sept. P.

3. *B. tenuissimum* L.
Slender Buplever.
Pastures chiefly near sea:
July-Sept. A.

4. *B. aristatum* Bartl.
Narrow Buplever. VR.
Dry places near sea: June-
July. A.

1. *H. vulgaris* L. \star
Marsh Pennywort.
Bogs; marshes: May-Aug. P.

1. *S. Pecten-veneris* L.
Shepherd's Needle.
Corn-fields: June-Sept. P.

*1. *T. maximum* L. \star
Great Hartwort. VR.
Cultivated and waste ground:
June-July. A.

1. *S. Libanotis* Koch
Mountain Seseli.
Chalk hills: July-Aug. B. or P.

1. *A. vulgaris* Pers.
Beaked Parsley.
Waste places: May-June. A.

1. *D. gummiter* Lam.
Sea Carrot. R. B.
Sea coast: June-Aug.

2. *D. Carota* L. \star
Common Carrot.
Pastures especially near sea:
June-Aug. B

XI. *Caucalis* L. *Caucalis*.—(Fig. C, p. 71.)

Involucre *absent*; involucre of 3-5 bracts; umbel with 2-3 rays; leaves bi- or tri-pinnate D; flowers white or pinkish; 4-20 in.



Involucre *present*, bracts 2-4; umbel with 2-5 rays; leaves pinnate L; flowers rose, seldom white; 8-24 in.



XII. *Torilis* Adans. *Torilis*.—

Leaves
pinnate or bipinnate.

Umbel almost sessile TN of 2-3 rays, or quite sessile, opposite leaves;



bracts of involucre longer than pedicels; involucre absent; flowers white; 4-20 in.

Umbels on long stalks; flowers white or pinkish.

Outer flowers *almost regular*; all the bristles of fruit bent TA; styles glabrous; involucre of 5 bracts; 2-3 ft.



Outer flowers *very irregular*; bristles at apex of fruit hooked; styles hairy at base; involucre of 0-4 bracts; 8-20 in.



XIII. *Pastinaca* L. *Parsnip*.—(Fig. PA, p. 72.)

Umbel of 8-12 rays; involucre absent; stem angular, furrowed; tap-root large; plant aromatic; 2-4 ft.

XIV. *Feniculum* Hill. *Fennel*.—(Fig. F, p. 72.)

Leaves dark green, petiole very broad; umbels large, 15-20 or more rays; flowers yellow; plant aromatic; 2½-5 ft.

XV. *Silaus* Bernh. *Silaus*.—(Fig. SI, p. 72.)

Plant glabrous; leaves pinnate, 1-4 times divided; involucre of several bracts reddish at apex; petals hairy along middle line below; 1-3 ft.

XVI. *Petroselinum* Hill. *Petroselinum*.—(Fig. PE, p. 72.)

Plant glabrous; leaves bipinnate, shining, aromatic; umbels of 15-20 or more rays; involucre of many threadlike bracts; 1-2 ft.

XVII. *Smyrnum* L. *Alexanders*.—

Stem stout, furrowed; leaves trifoliate, bi- or tri-ternate, coarsely toothed; petiole sheathing; umbels of 8-12 rays flat; fruit black, aromatic; 3-4 ft.

1. *C. daucoides* L.
Small Caulis R.
Corn-fields; June-July. A.

*2. *D. latifolia* L. ✕
Broad Caulis R.
Corn-fields; June-July. A.

1. *T. nodosa* Gærtn.
Knotted Hedge Parsley.
Dry places; May-July. A.

2. *T. Anthriscus* Gmel.
Hedge Parsley C.
Roadsides; July-Sept. B.

3. *T. infesta* Hoffm.
Spreading Hedge Parsley.
Fields; June-Sept. B.

1. *P. sativa* L. ✕
Common Parsnip.
Roadsides; July-Aug. B.

1. *F. vulgare* Mill. ✕
Common Fennel.
Dry banks and rocks near sea; July-Aug. B. or P.

1. *S. flavescens* Bernh.
Pepper Savitrag.
Damp pastures; July-Sept. P.

*1. *P. sativum* Hoffm. ✕
Parsley R.
Rocks; old walls near sea; June-Aug. B.

1. *S. Olusatrum* L.
Alexanders.
Waste places; May-June. B.

XVIII. *Apium* L. *Apium*.—

Involucels absent; stem erect, angular, furrowed; leaves pinnate or trifoliate, shining; leaflets broad; flowers greenish-white; petals with involute apex (Fig. AG, p. 72); 1-3 ft.

Involucel of 2-4 small

bracts; flowers white;

petals with acute

apex (Fig. HN, p. 73).

Stem creeping, often submerged; lower leaves cut into *fine segments* H; upper leaves with 5 leaflets; umbel 2-3 rayed HI; 4-36 in.



Stem prostrate; rooting; leaves *pinnate*; leaflets toothed, acute N; umbel 4-8 rayed, peduncle short N; 1-4 ft.



XIX. *Ammi* L. *Ammi*.—Leaves slightly glaucous with stiff teeth; lower ones sometimes only slightly pinnate; bracts of involucl narrow, long; flowers white; 1-2½ ft.

XX. *Apinella* Neck. *Apinella*.—

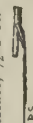
Root-stock woody covered with old leaf-bases; leaflets very narrow, often thread-like, glaucous; umbels small, 4-6 rayed, many; 3-8 in.

XXI. *Pimpinella* L.¹ *Pimpinella*.—



Leaflets and teeth *acute* PM;

stem *angular*, coarsely striate; ½-4 ft.



Leaflets more *rounded*, more finely toothed PS;



stem *rounded*, finely striate; ½-2 ft.

XXII. *Ægopodium* L. *Goutweed*.—(Fig. Æ, p. 72.)

Stem erect, glabrous, furrowed; leaflets toothed, acute; umbel with unformed fruits at centre; root-stock creeping; 2-3 ft. (Bishop-weed; Herb Gerard.)

XXIII. *Chærophylllum* L. *Chervil*.—

Leaflets *acute*, deeply toothed; fruit with a ring of hairs at base AS; 2-4 ft.



Umbels on *long*

peduncles;

Leaflets *obtusæ*, almost

flowers white. } crenate CH;

fruit without ring of hairs at base; stem rough, spotted; 1-4 ft.



Umbels *sessile*, opposite leaves (Fig. CE, p. 74); flowers white; stem striate; 1-1½ ft.

XXIV. *Myrrhis* Scop. *Cicely*.—

Stem stout, hollow; leaflets deeply toothed; bracts of involucl thin, whitish, finely pointed; flowers white; plant very aromatic; 2-3 ft.

1. *A. graveolens* L. ✠ *Celery*.

Wet places, chiefly near sea: June-Aug. B.

2. *A. inundatum* Reich. *Lesser Apium*.

Marshes; shallow ponds: June-July. P.

3. *A. nodiflorum* Reich. *Procumbent Apium*.

Wet ditches and meadows: July-Aug. P.

*1. *A. majus* L. River banks: July-Sept. A.

1. *A. glauca* O. Kuntze. *Honewort*. R.

Dry, calcareous hills: May-June. P.

1. *P. magna* L.² *Greater Pimpinella*.

Shady damp places: July-Sept. P.

2. *P. Saxifraga* L. *Burnet Saxifrage*. C.

Roadsides; hilly places: July-Sept. P.

1. *Æ. Podagraria* L. ✠ *Goutweed*.

Damp shady places: June-Aug. P.

1. *C. sylvestre* L. ✠ *Wild Chervil*. C.

Hedges: Apr.-June. P.

2. *C. temulum* L. ✠ *Rough Chervil*.

Hedges: June-July. B.

*3. *C. sativum* Gærtn. ✠ *Garden Chervil*.

Waste places; escape: May-July. A.

1. *M. odorata* Scop. *Sweet Cicely*.

Hilly pastures: May-June. P.

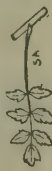
XXV. *Falcaria* Host. *Falcaria*.—(Fig. FR, p. 73.)
Lower leaves simple or trifoliate; margin of leaf toothed, cartilaginous; flowers white; 16-24 in.

XXVI. *Heracleum* L. *Heracleum*.—(Fig. H, p. 73.)

Plant rough; leaves large; leaflets deeply cut; umbel about 20-rayed; petals white, cleft; 3-5 ft.
[Hog-weed.]

XXVII. *Sison* L. *Sison*.—

Lower leaves with 5-9 leaflets SA;



terminal leaflet slightly 3-lobed; petals cleft, white; 2-3 ft.
[Bastard Stone Parsley.]

Lower leaves with many leaflets PS;



terminal leaflet oval, acute; petals notched or entire, white 16-24 in. [Corn Parsley.]

XXVIII. *Sium* L. *Sium*.—

Leaflets finely toothed L;



bracts of involucre usually entire; styles slender; flowers white; 2½-4 ft.

Leaflets coarsely toothed A;



bracts of involucre usually cut; style enlarged at base; flowers white; 1-3 ft.
[Water Parsnip.]

XXIX. *Crithmum* L. *Samphire*.—(Fig. CRI, p. 74.)

Leaves fleshy, glaucous-green; leaflets spreading; involucre and involucl of many bracts; edges of fruit sharp; plant almost woody at base; 4-12 in.

XXX. *Meum* Hill. *Spiguel*.—(Fig. ME, p. 74.)

Umbel of 10-20 rays, rough on inner side; involucre 0-3 bracts; involucl 3-8 bracts; edges of fruit sharp; plant glabrous, aromatic; flowers white; 4-16 in.
[Baldmoney.]

XXXI. *Angelica* L. *Angelica*.—(Figs. AS, A, p. 73.)

Umbel of 20-30 rays, smaller at centre; stem smooth; involucre of 2-3 bracts; involucl of several bracts, reflexed; flowers white; 2-5 ft.

XXXII. *Archangelica* Hoffm. *Archangelica*.—

Leaves very large, terminal leaflet trifid; flowers, petioles and stems bright green; 3-5 ft.

*1. *F. Rivini* Host. R.
(corn-fields; July-Aug. P.

1. *H. Spondylium* L. ✠
Cow Parsnip. C.

Damp waste places; June-Aug. B.

1. *S. Anomum* L. ✠
Hedge Sison.

Damp shady places; July-Aug. B.

2. *S. segetum* L.
Damp fields; July-Sept. A. or B.

1. *S. latifolium* L. ✠
Water Parsnip.

Marshes; edges of streams; July-Aug. P.

2. *S. angustifolium* L. ✠
Lesser Sium.

Ditches; ponds; July-Aug. P.

1. *C. maritimum* L.
Samphire.

Rocky sea cliffs; May-Aug. P.

1. *M. Athamanticum*
Jacq.

Spiguel Meu.
Dry mountain pastures; June-July. P.

1. *A. sylvestris* L. ✠
Wild Angelica. C.

Damp shady places; July-Aug. P.

*1. *A. officinalis* Hoffm.
Garden Angelica. P.

1. *Pimpinella Anisum* L. ✠ (Aniseed), with hairy fruits and basal leaves reduced to a terminal leaflet, is cultivated for its aromatic fruits. 2. Var. *dissecta* Retz. has finely cut leaves.

XXXIII. *Selinum* L. *Selinum*.—(Figs. S, SC, p. 73.)

Umbel of 15-20 rays, smooth on inner side; stem winged and membranous at edges; flowers white; 1-3 ft.

XXXIV. *Cicuta* L. *Coubane*.—(Fig. 32.)

Stem furrowed, hollow; leaves bi- or tri-pinnate or trifoliate; segments narrow and toothed (CV); umbel of 10-15 rays; flowers white; plant very poisonous; 2½-4 ft.

[Water Hemlock.]

XXXV. *Coriandrum* L. *Coriander*.—

Leaves bipinnate; leaflets more or less deeply cut, upper ones fleshy; umbels 5-8 rayed; flowers white; odour disagreeable; 1-2 ft.

XXXVI. *Physospermum* Cuss. *Physospermum*.—

Radical leaves two or three times trifoliate; cauline leaves few; umbels of 10-12 rays; flowers white; 1-3 ft.

[Bladder Seed.]

XXXVII. *Enanthe* L. *Enanth*. [Water Dropwort].—

Tubers elongated, close to stem; umbel of 15-20 rays; flowers white; juice yellow on exposure; plant poisonous; 2-5 ft.

Tubers below middle of root PIM; umbel of 6-12 rays; fruiting pedicel becoming thick around base of fruit; flowers yellowish-white; 1-3 ft.



Umbellule with central sessile fertile flowers, and outer barren pedicellate flowers.

Roots sometimes fleshy, not distinctly tuberous; flowers white.

Umbel of 5-10 rays PC; Stem hollow.

Stem solid; lower leaves bipinnate LA with petioles slightly winged; umbel of 6-12 rays; median leaves bipinnate PE; 2-3 ft.



Umbel usually 2-3 rayed F



median leaves pinnate; 2-3 ft.

Umbellule with all flowers fertile and pedicellate; flowers white; no tubers.

Stem erect; leaves bi- or tri-pinnate P; segments of submerged leaves fine, diverging; 1-4 ft.



[Housebane.]

Stem floating; leaves bipinnate; segments of submerged leaves parallel; 1-4 ft.

1. *S. carvifolium* L. VR.
Damp woods: July-Sept. P.

1. *C. virosa* L. ✕
Coubane, R.
Wet places; edges of pools: July-Aug. P.

*1. *C. sativum* L.
Coriander, R.
Waste places: June-July. A.

1. *P. commutatum* Spr.
Cornish Physospermum.
LOC.

Woods: July-Aug. P.

1. *Æ. crocata* L. ✕
Hemlock Enanth.
Wet ditches; sides of streams: July-Aug. P.

2. *Æ. pimpinelloides* L. R.

Moist or dry meadows and pastures: June-Aug. B. or P.

3. *Æ. lachenali* Gmel.
Parsley Enanth.
Fresh and salt marshes: June-Aug. P.

4. *Æ. peucedanifolia* Poll.

Marshes and wet places: June-July. P.

5. *Æ. fistulosa* L. ✕
Water Dropwort.
Wet ditches; marshes: July-Sept. P.

6. *Æ. phellandrium* Lam. ✕
Fine-leaved Enanth.
Wet ditches; marshes: July-Sept. B. or P.

7. *Æ. fluviatilis* Coleman.
Streams: July-Sept. B. or P.

XXXVIII. *Peucedanum* L. *Peucedan*.—

Flowers *yellowish*; leaves 3-5 times trifoliate; segments linear, entire; umbels of 20-30 rays; 2-3 ft.

[Sulphur-weed.]



Leaves bi- or tri-pinnate PA; segments oval, acute, toothed; umbels of 20-30 rays; juice white; 3-5 feet.
[Hog's Fennel.]

Flowers
White.

Leaves *large, trifoliate*; leaflets deeply 3 lobed, 2 in. across, coarsely toothed; involucre absent; umbel of 30-50 rays; 2-3 ft.

XXXIX. *Ligusticum* L. *Louage*.—

Stem erect, glabrous, hollow; leaves twice trifoliate; leaflets toothed; umbel of 12-20 rays; flowers pinkish-white; 1-2 ft.

XL. *Conium* L. *Hemlock*.—(Fig. CM, p. 74.)

Involucre of reflexed bracts; those of involucre unilateral; leaves soft, shining; stem glabrous, hollow, lower part usually spotted with purple; flowers white; odour disagreeable; plant poisonous; 3-6 ft.

XLI. *Æthusa* L. *Foot's Parsley*.—(Fig. CV, p. 74.)

Involucre absent; bracts of involucre reflexed towards exterior, longer than umbellule; umbels 8-12 rayed; flowers white; leaves bright green, segments narrowly lobed; plant glabrous, poisonous, odour nauseous; 6-24 in.

XLI. *Carum* L. *Carum*.—

Underground part a *tuber*; lower leaves bi- or tri-pinnate, segments linear (Fig. B, p. 74); bracts fine, acute; umbels with many rays; flowers white; 4-28 in.

[Great Earth-nut; Fig-nut.]

No *tuber*;
umbel of 8-10 rays; flowers white.

Involucre 0-2 bracts; leaves bi- or tri-pinnate, outline oval, segments narrow; fruits aromatic; 1-2 ft.

Involucre of many bracts; leaves bipinnate, outline long and narrow; segments apparently whorled (Fig. V, p. 73); 12-28 in.

XLIII. *Conopodium* Koch. *Conopodium*.—(Fig. CD, p. 74.)

Annual stems erect, slender, glabrous; umbel of 8-10 rays; flowers white; 4-16 ft. [Earth-nut.]

1. *P. officinale* L.
Hog's Fennel. R.
Salt marshes; July-Sept. P.

2. *P. palustre* Mönch
Milk Parsley. R.
Marshes; July-Aug. P.

3. *P. Ostruthium* Koch
Masterwort. R.
Moist meadows; June-July. P.

1. *L. scoticum* L.
Scotch Louage. Loc.
Rocky coasts; July-Aug. P.

1. *C. maculatum* L. ♀
Hemlock.
Hedges and waste places; June-July. B.

1. *Æ. Cynapium* L. ♀
Foot's Parsley. C.
Gardens; fields; July-Aug. A.

1. *C. Bulbocastanum*
Koch.
Tuberous Carum. Loc.
Fields; June-July. P.
2. *C. Carvi* L. ♀
Caraway.
Meadows; pastures; June-July. B.

3. *C. verticillatum* L.
Whorled Carum. Loc.
Moist shady places; July-Aug. P.

1. *C. denudatum* Koch
Pig-nut.
Fields; woods; May-June. P.

ARALIACEÆ. Several varieties of Ivy are cultivated, their leaves vary somewhat in shape and size; one has yellow berries.



I. Hedera L. Ivy.—(Fig. H, p. XXII.)

Shrub; leaves alternate, thick, shining, evergreen; flowers greenish-yellow, umbellate; berry black, 2-5 seeded; climbs by adventitious roots on back of stem.

1. H. Helix L. ✕
Common Ivy.
Walls, trees; Oct.-Nov. P.

CORNACEÆ. The species are usually shrubs or small trees; many are cultivated in shrubberies. The outer part of the fruit is fleshy and surrounds a "stone" enclosing the seeds; the fruit is a berry-like drupe.

Cornus L. Cornus—

Plant a shrub.		Flowers white, appearing after the leaves, without involucre 3;		fruits black when ripe.
		Flowers yellow, appearing before the leaves, without involucre 4;		fruits red when ripe.

1. C. sanguinea L. ✕
Dogwood.
Hedges; thickets; May-June P

***2. C. mas L. ✕**
Shrubberies Mar.-Apr. P.

Plant herbaceous; umbel few flowered; involucre of 4 white bracts; petals minute, dark purple; fruits red.

LORANTHACEÆ. The Mistletoes parasitise on the branches of old trees, e.g. Apple, Pear, Poplar.

1. Viscum L. Mistletoe.—(Fig. VI, p. XXVIII.)

Shrubby; branches tufted, yellowish-green; flowers yellowish, dioecious; fruit succulent, white.

3. C. suecica L.
Dwarf Cornel.
Moist mountain woods, July-Aug. P.

1. V. album L. ✕
Mistletoe.
Old trees; Mar.-Apr. P.

CAPRIFOLIACEÆ. Several shrubs belonging to this natural order are cultivated for ornamental purposes, e.g. Snowberry, Laurustinus.

Leaves almost or quite entire; style 1; stigma 1 or slightly divided in three. } *Shrub erect, or climbing; stamens 5.*
 } *Trailing plant; stamens 4.*

Leaves ternate A; styles as many as stigmas; inflorescence almost a globose head of four lateral 5-partite and one



terminal 4-partite flowers, yellowish-green.

III. Adoxa L., p. 83.
Moschatel.

I. Lonicera L., p. 83.
Honeysuckle.

II. Linnæa L., p. 83.
Linnaea.

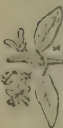
Stigmas sessile; flowers usually white. } *Leaves pinnate; fruit 3-5 seeded.*
 } *Leaves simple or lobed, toothed; fruits 1 seeded.*

IV. Sambucus L., p. 83.
Elder.

V. Viburnum L., p. 83.
Viburnum.

I. *Lonicera* L. *Honeysuckle*.—

Flowers in axillary pairs X, very downy;



corolla yellowish-pink, tube short with protuberance; leaves petiolate; shrub erect; 3-5 ft.



Flowers in terminal heads C, P;

Upper leaves connate C;

flowers sessile, pink or yellowish-white, fragrant; shrub climbing.

corolla - tube long.

Upper leaves separate P;

flowers with pedicels, yellowish-white, fragrant; shrub climbing.

II. *Linnaea* L. *Linnaea*.—

Evergreen; leaves small, opposite, toothed near apex; peduncles erect, 2-flowered; flowers fragrant, pale-pink or white, drooping; 3-8 in.

III. *Adoxa* L. *Moschatel*.—(Fig. A, p. 82.)

Radical leaves with long petioles; filaments of stamens divided in two almost to their base; plant with musk-like odour; 4-6 in.

IV. *Sambucus* L. *Elder*.—

Plant herbaceous; stipules large, green E;



leaflets 5-11; flowers white or reddish, colour of bitter almonds; fruits black; 3-5 ft.



Inflorescence corymbose or cymose with 5 main branches SN;



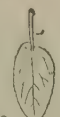
Tree or shrub; stipules absent or small N.

Inflorescence an elongated compound raceme R;



flowers all stalked; fruit red.

V. *Viburnum* L. *Viburnum*.—Leaves regularly toothed L, uneally beneath;



flowers all similar; fruit black when ripe.

Tree or shrub. } Leaves lobed, to 10 l, glabrous;



outer flowers of inflorescence larger than rest, and producing no fruits; ripe fruits red.

1. *L. Xylosteum* L. *Fly Honeysuckle*. Thickets: May-June. P.

2. *L. Caprifolium* L. *✠ Perfoliate Honeysuckle*. Thickets: May-June. P.

3. *L. Periclymenum* L. *Common Honeysuckle*. C. Hedges; woods: June-Sept. P.

1. *L. borealis* L. *Linnaea*. Loc. Fir-woods: July-Aug. P.

1. *A. Moschatellina* L. *Tuberous Moschatel*. Moist shady places. Apr.-May. P.

1. *S. Ebulus* L. *✠ Dwarf Elder*. Loc. Waste places: July-Aug. P.

2. *S. nigra* L. *✠ Common Elder*. Hedges; woods: June-July. P.

3. *S. racemosa* L. *Red-berried Elder*. Shrubberies: Apr.-May. P.

1. *V. Lantana* L. *Wayfaring Tree*. Hedges and thickets: May-June. P.

2. *V. Opulus* L. *✠ Guelder-Rose*. Hedges; thickets: June-July. P.

1. The garden *Laurustinus* belongs to this genus.—2. A variety cultivated in gardens has all its flowers large, without either stamens or pistil; the inflorescence is globular; it is known as Snowball.

RUBIACEÆ.

The British members of this N.O. have their leaves apparently in whorls, but as branches are produced in the axils of only two of these leaves it is considered that these two leaves, which are opposite, are the only true ones. The others are really stipules resembling the true leaves. — Several well-known exotic plants belong to this order, e.g. Coffee, Quinquina.

Calyx with 6 sepals S; flowers with involucre of bracts united at base SA;

Sepals not or only slightly distinct GS.

Corolla funnel-shaped AC;

Corolla rotate GS.



fruit dry.



corolla-tube narrow S.



II. *Sherardia* L., p. 85.
Sherardia.

III. *Asperula* L., p. 85.
Asperula.

Leaves evergreen, bordered with stiff reflexed teeth R P; corolla usually 5-lobed; fruit fleshy, black.
Leaves not evergreen, with or without teeth; fruit dry.



IV. *Rubia* L., p. 85.
Madder.

I. *Galium* L., p. 84.
Galium.

I. *Galium* L. *Galium*.

Leaves in fours, oval, ciliate GC;



flowers sometimes imperfect, staminate or pistillate; 1-2 ft.

Flowers yellow.

Leaves 6 or 8 in a whorl, narrow, linear V;



flowers all perfect; 8-24 in.

Leaves obtuse P,



4-5 in a whorl, rarely 6; anthers dark pink; 1-5 ft. [Marsh Bedstraw.]

Leaves on middle of stem 4-6 mm. long,



[GS, natural size]; leaves usually 4-6 in a whorl; fruit granulated; 4-10 in. [Heath Bedstraw.]

Stem with no prickles on its angles; sometimes smooth.

Leaves 4 in a whorl, with 3 prominent nerve, BO; fruit with hooked hairs; 8-16 in.



Petals acute GM; fruit smooth; 1 1/2-5 ft. [Hedge Bedstraw.]



Leaves 6-8 in a whorl, with only 1 prominent nerve.



Petals obtuse GS; fruit granulated; 4-12 in.

1. *G. Cruciata* Scop.
Crosswort.

Shady places: Apr.-June. P.

2. *G. verum* L. ♀
Ladies' Bedstraw. C.

Pastures; hedges: June-Sept. P.

3. *G. palustre* L.¹
Marsh Galium. C.

Marshes: June-Aug. P.

4. *G. saxatile* L.
Heath Galium. C.

Heaths: June-Aug. P.

5. *G. boreale* L.
Northern Galium.

Moist rocky mountain pastures: July-Aug. P.

6. *G. Mollugo* L.²
Hedge Galium.

Hedges; thickets: July-Sept. P.

7. *G. sylvestre* Poll.

Mountain Galium. Hills and pastures: June-Aug. P.

white, sometimes reddish.

acute apex.

- Flowers usually
Leaves with
- Stem with
prickles
on its
angles.
- Fruit
1-2 mm.
broad.
- Leaves becoming
reflexed A;
- corolla slightly reddish outside; prickles on
leaves pointing towards apex; 4-16 in.
8. *G. anglicum* Huds.
Wall Galium. R.
Walls; stony places: June-July.
A.
- Fruit
3-6 mm.
broad.
- Fruit covered with
hooked hairs
or bristles GA, seldom smooth;
- peduncles longer than
leaves; 1-5 ft.
[Goose-grass.]
10. *G. Aparine* L.³ ✠
Cleavers. VC.
Hedges; thickets: June-Aug. A.
- Fruit granulated, often with
1 carpel aborted GT;
- peduncles shorter than leaves;
4-16 in.
11. *G. tricornne* With.
Corn Galium.
Corn-fields: July-Aug. A.
- III. *Sherardia* L. *Sherardia*.—(Fig. SA, S, p. 84.)
Calyx with ciliated sepals, persistent, crowning the fruit; corolla lilac, seldom white; flowers small in
terminal head; 4-16 in.
- III. *Asperula* L. *Asperula*.—
Plant annual; flowers blue, in a head surrounded by involucre
of bracts AA;
- bracts long, ciliate; leaves
6-10 in a whorl; 8-12 in.
- Flowers white; leaves 6-9 in a whorl AO; fruit covered with hooked hairs; plant fragrant
when dry; 8-16 in.
- Flowers pink; leaves 4 in a whorl; corolla rough
outside AC;
- fruit rugose C; 6-10 in.
2. *A. odorata* L. ✠
Woodruff.
Woods: May-June P.
3. *A. cynanchica* L. ✠
Squinancy Wort.
Dry chalky pastures: June-
Aug. P.
- IV. *Rubia* L. *Madder*.—(Fig. RP, p. 84.)
Leaves persistent, nerves only slightly prominent beneath, 4-6 in a whorl; flowers small, greenish-yellow;
anthers rounded; 1-4 ft.
1. *R. peregrina* L.⁴
Wild Madder.
Rocky and stony places: June-
Aug. P.

1. Var. *elongatum* Presl., a robust plant with spreading branches and large flowers.—2. Var. *erectum* Huds., leaves not transparent, flowers a beautiful white.—3. Var. *Vaillantii* DC., stem not swollen at nodes, fruit hairy; var. *spurius* L. stem not swollen at nodes, fruit small and smooth.—4. *Rubia tinctorium* L. ✠ [Dyers' Madder] is sometimes cultivated; its leaves have nerves forming a prominent network beneath.

VALERIANACEÆ.

Several members of this natural order are cultivated as food, e.g. Lamb's Lettuce, and others as ornamental plants, e.g. Valerian, Centranth.

Flowers usually in corymbs.

Leaves, at least the upper ones, *deeply divided*, fruit crowned with a pappus OF.

Leaves entire or toothed



(Corolla-tube *spurred* C;



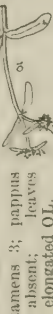
stamen 1; fruit with pappus.



I. *Valeriana* L., p. 86.
Valerian.

II. *Centranthus* Neck.
p. 86.
(Centranth.

III. *Valerianella* Hill,
p. 86.
Corn Salad.



stamens 3; pappus absent; leaves elongated OL.



I. *Valeriana* L. *Valerian.*
(Median leaves with 15-21 leaflets O;

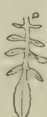
flowers perfect, white or pink; 2-4 ft. [All-heal.]

1. *V. officinalis* L. $\frac{1}{4}$
Common Valerian. C.
Marshes; damp woods; June-Aug.

Median leaves with fewer and broader leaflets; flowers perfect, white or pink; 2-4 ft.

2. *V. sambucifolia* Mik.
Marshes; damp woods; June-Aug.

(Median leaves with 7-11 leaflets D;



flowers dioecious, white or pink; 8-16 in.

3. *V. dioica* L. $\frac{1}{4}$
Marsh Valerian.
Marshes; damp woods; May-June.

Leaves simple except upper ones which have 1-2 pairs of leaflets and a large terminal one; flowers white or pink; 2-4 ft.

*4. *V. pyrenaica* L.
Pyrenean Valerian.
Woods, escape; June-July, P.

II. *Centranthus* Neck. (*Centranth.*—(Fig. C, above.)

Leaves ovate, lower ones petiolate; spur twice as long as ovary; flowers red, seldom white; 1-2 ft.

III. *Valerianella* Hill. *Corn Salad.* —

Calyx with sepals surrounding the fruit, teeth very unequal VE;



fruit with lines of hairs; 4-8 in.



with 3 fine ribs on opposite side; 8-20 in.

with 3 fine ribs on opposite side; 8-20 in.



with 3 fine ribs on opposite side; 8-20 in.



with 3 fine ribs on opposite side; 8-20 in.



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DIPSACEÆ. Several plants of this N.O. are cultivated, either n gardens' or ornamental purposes, e.g. *Scabious*, or in fields for use in industries, e.g. Fullers' Teasel.

Stem prickly, at least in the upper part; bracts on the receptacle and between the flowers, scaly and spinous. I. *Dipsacus* L., p. 87.

Stem not prickly. { Calyx surmounted by 6-8 bristles K; no scales between flowers; leaves usually with broad lobes K.N. } III. *Knaulia* Coult., p. 87.

II. *Scabiosa* L., p. 87. *Scabious*. Calyx surmounted by 4-5 bristles (Fig. S, below); scales present between flowers.

I. *Dipsacus* L. *Teasel*.—



Involucre of prickly bracts DS;

leaves entire or crenate, often cuneate; flowers lilac or white; 3-6 ft.

1. *D. sylvestris* L. *Wild Teasel*. Waste places: Aug.-Sept. B.



Involucre of hairy bracts DP;

leaves usually 3-lobed, middle segment large; flowers yellowish-white; 2½-4 ft.

2. *D. pilosus* L. *Small Teasel*. [Shepherd's Rod.] Wet shady places: Aug.-Sept. B.

II. *Scabiosa* L. *Scabious*.—



Leaves all entire SS;

corolla 4-lobed; calyx green, 4-toothed; bristles blackish, twice as long as calyx-cup; flowers blue, seldom white, in 3 capitula; 1-3 ft.

1. *S. Succisa* L. *Devil's-bit*. VC. Pastures: July-Oct. P.

Median leaves deeply lobed CO; corolla 5-lobed; calyx membranous; bristles blackish, much longer than calyx-cup S; flowers lilac or purplish, outer ones larger; 1-2 ft.



2. *S. columbaria* L. *Small Scabious*. Chalky pastures; waste places July-Aug. P.

III. *Knaulia* Coult. *Knaulia*.—(Figs. KN, K, above.)

Outer florets of capitulum with much larger corolla than the rest; flowers purple or lilac-purple; fruit hairy; 1. *K. arvensis* Coult. *Field Scabious*. O. stem hollow; 1-3½ ft.

Fields; waste places: June-Aug. P.

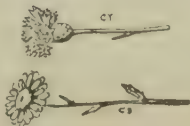
1. *Dipsacus fullonum* Mill. *✕* [Fullers' Teasel], bracts of involucre a little shorter than capitulum, scales between flowers hooked at apex; cultivated.

COMPOSITÆ.

To determine the greater number of the species belonging to this N.O., it is necessary to gather specimens having ripe or well-formed fruits.—Several edible species are cultivated, e.g. Artichoke, Jerusalem Artichoke, Salsify, Lettuce, Chicory, etc.; others are cultivated as ornamental or medicinal plants.

Leaves prickly.

Florets tubular, at least those of disc.
(Examples: CS, CY, CR, A.V.)



Leaves not prickly.

Leaves alternate or all at base.

Florets all the same colour.



Involucre of several rows of bracts, unequal.
(Examples: CO, HE.)



Fruit surmounted by pappus, sometimes very short, at least those at centre.

Fruit without pappus.
(Example: TH.)



Involucre of 1 or 2 rows of bracts, nearly equal in principal row.

(Examples: E, VU.)



GROUP 1, p. 89.

GROUP 2, p. 89.

GROUP 3, p. 90.

GROUP 4, p. 90.

GROUP 5, p. 91.

GROUP 6, p. 91.

GROUP 7, p. 91.

GROUP 8, p. 92.
(Cichoriaceæ or Ligu-
lifloræ.)

No tubular florets; all florets ligulate. (Examples: VI and following figure.)
[Do not confuse the unopened ligulate florets at the centre of the capitulum with tubular florets.]



GROUP 1.—

Florets united in a globular head E;



fruits hairy, almost without pappus.

Florets all tubular.

Involucre with outer bracts very different from the leaves: florets rose, purple or yellowish-white.

Involucre with outer bracts resembling the leaves C; florets yellow or yellowish-white; inner bracts radiating.

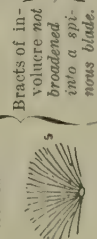
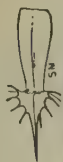


Pappus of feathery hairs CE.



Pappus of hairs simple or toothed S.

Bracts of involucre terminating in broad, spinous blade SM.



Bracts of involucre not broadened into a spinous blade. Branch strongly winged below capitulum O: scales absent between flowers.



Branch scarcely winged below capitulum; scales present between flowers.

GROUP 2.—

Florets pale reddish-purple; capitula numerous in corymbs EU;



Involucre of bracts shorter than flowers.

Leaves lobed or toothed; bracts of involucre very unequal.

Capitulum narrow. Capitulum 1-2 cm. in diameter; bracts in 2 rows, outer long and spreading B;



stem 4-28 in.

Capitulum broad, 8-20 cm. in diameter; bracts in several rows; stem 3-7 ft.

Capitulum about 1/2 cm. in diameter; bracts in 1 row; stem 6-28 in.

Capitulum about 1/2 cm. in diameter; bracts in 1 row; stem 6-28 in.

I. *Echinops* L., p. 94.
Echinops.

II. *Carlina* L., p. 94.
Carlina.

III. *Cirsium* Hill, p. 94.
Plume Thistle.

IV. *Silybum* Gaertn., p. 95.
Silybum.

V. *Onopordon* L., p. 95.
Onopord.

VI. *Carduus* L., p. 95.
Thistle.

XIX. *Eupatorium* L., p. 98.
Eupatory.

XI. *Bidens* L., p. 96.
Bidens.

XII. *Galinsoga* R. and P., p. 96.
Galinsoga.

XIII. *Helianthus* L., p. 96.
Helianthus.

GROUP 3.—

Receptacle of capitulum *not* convex; leaves entire or toothed.

{ Ray-florets *spreading* A, blue, purple, rarely white.
Ray-florets *erect*, pinkish-purple or whitish.

Receptacle of involucre *convex* M or *conical* AC.

Bracts of involucre in 2 rows; leaves all or nearly all radical B;



ray-florets white or pinkish.



Leaves *entire*, toothed VU or *broadly lobed* PA;



Fruit ribbed; pappus *absent*.



Bracts of involucre in *several* rows; leaves *alternate*.



Leaves with narrow lobes or leaflets MC, M.



No scales between flowers I;



(plant glabrous).

Scales present between flowers CO;



(plant more or less hairy, or ribs of fruit rough).



GROUP 4.—

Flowering stems appearing *before* foliage leaves, and bearing scale leaves F, PV.

Capitula *solitary* F;



florets *yellow*.

Capitula in *raceme* PV;

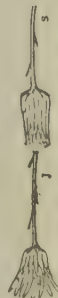


florets *pink or white*.

Fruit *curved*, dorsal ribs toothed, pappus *absent* CA;



Fruits *elongated*, with pappus at least at *centre*; florets *yellow*.



XIV. *Aster* L., p. 96.
Aster.

XXXII. *Erigeron* L., p. 102.
Erigeron.

XV. *Bellis* L., p. 97.
Daisy.

XVI. *Chrysanthemum* L., p. 97.
Chrysanthemum.

XVII. *Matricaria* L., p. 97.
Matricary.

XVIII. *Anthemis* L., p. 97.
Chamomile.

XX. *Tussilago* L., p. 98.
Coltsfoot.

XXI. *Petasites* Hill, p. 98.
Petasites.


XXII. *Calendula* L., p. 98.
Marigold.


XXIV. *Senecio* L., p. 98.
Senecio.

XXIII. *Doronicum* L., p. 98.
Doronic.

GROUP 5.—


Florets all *white or pinkish*; capitula in corymbs.

Ray-florets <i>ligulate</i> .	Capitula <i>solitary</i> .	Capitula in <i>racemes</i> or <i>panicles</i> AV; Capitula in <i>corymbs</i> TV; florets bright yellow.	Plant glabrous; <i>scales absent</i> between flowers. [See XVI. <i>Chrysanthemum segetum</i> .] Plant downy; <i>scales present</i> between flowers. [See XIX. <i>Anthemis tinctoria</i> .] Florets <i>purple</i> , seldom white. [See VII. <i>Centaurea</i> .]	

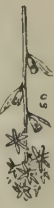
Florets <i>all</i> <i>tubular</i> .	Capitula <i>not</i> <i>solitary</i> .	Capitula in <i>racemes</i> or <i>panicles</i> AV; Capitula in <i>corymbs</i> TV; florets bright yellow.	Plant <i>cotony</i> , <i>white</i> ; leaves simple; no scales between flowers. Plant <i>green</i> ; leaves pinnate; scales present between flowers.	 TV TV

GROUP 6.—

Outer bracts of involucre *hooked* at apex LA;


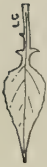







Ray-florets <i>all</i> <i>tubular</i> .	Bracts of involucre <i>not</i> <i>hooked</i> .	Bracts of involucre <i>either spinous, or toothed, or ciliate</i> . Bracts of involucre acute ST, <i>neither spinous, nor</i> <i>toothed, nor ciliate</i> . Involucre <i>globular</i> HE, <i>golden-yellow</i> ; bracts <i>not spreading</i> at maturity. Involucre a <i>dull yellow</i> , greenish, or whitish; bracts at maturity <i>spreading in sunlight</i> . Ray-florets <i>yellowish, whitish, or purple</i> ; disc florets <i>yellow or yellowish</i> .	leaves entire or nearly so.	 HE

GROUP 7.—

Plant <i>green</i> ; leaves <i>all</i> ways <i>toothed</i> or <i>wavy</i> ; florets <i>conspicuous</i> .	Florets <i>all</i> <i>yellow</i> .	Ray-florets <i>ligulate</i> .	Ligulate florets 5-10 SO; receptacle pitted. Ligulate florets usually numerous, sometimes almost tubular; receptacle not pitted; bracts spreading at apex.	 SO

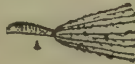
- XXV. *Achillea* L., p. 100.
Achillea.
- XXVI. *Cotula* L., p. 100.
Cotula.
- XXVII. *Artemisia* L.,
p. 100. *Artemisia*.
- XXVIII. *Diotis* Desf., p. 100.
Diotis.
- XXIX. *Tanacetum* L.,
p. 100.
Tanacetum.
- X. *Arctium* L., p. 96.
Arctium.
- VII. *Centaurea* L., p. 95.
- VIII. *Serratula* L.,
p. 96. *Serratula*.
- IX. *Saussurea* DC.,
p. 96. *Saussurea*.
- XXXI. *Helichrysum*
Willd., p. 102.
- XXX. *Gnaphalium* L.,
p. 101. *Gnaphalium*.
- XXXII. *Erigeron* L.,
p. 102. *Erigeron*.
- XIV. *Aster* L., p. 96.
Aster.
- XXXIV. *Solidago* L.,
p. 102. *Solidago*.
- XXXIII. *Inula* L., p. 102.
Inula.

GROUP 8. *Cickoriaceæ* or *Ligulifloræ*.—

Fruits all without pappus of hairs L, C.		Leaves alternate, toothed LC.		XXXV. <i>Lapsana</i> L., p. 103. <i>Lapsane.</i>
Florets yellow: fruit not crowned L.	Florets blue; fruit crowned by ring of small scales C;	Leaves all radical AM.		XXXVI. <i>Arnoseris</i> Gært., p. 103. <i>Arnoseris.</i>
Lower leaves entire or toothed.	Lower leaves deeply cut.	leaves alternate.		XXXVII. <i>Cichorium</i> L., p. 103. <i>Chicory.</i>
Fruits, at least those at centre of capitulum, with pappus of hairs borne on a beak 1-14 mm. long F.	Stem hollow throughout its whole length; leaves usually glabrous T.	Stem solid in upper part; leaves hairy or glabrous.		XXXVIII. <i>Taraxacum</i> Juss., p. 103. <i>Dandelion.</i>
Bracts of involucre prickly H;	Bracts of involucre not prickly; leaves glabrous, grass-like TP.		leaves toothed, with prickly hairs.	XLI. <i>Helminthia</i> Juss., p. 103. <i>Helminth.</i>
Cauline leaves present, alternate.	Involucre glabrous; fruit 1-3 mm. broad, beak hair-like P.	Involucre hairy; fruit less than 1 mm. broad, insensibly prolonged into a slender beak BT.		XL. <i>Tragopogon</i> L., p. 103. <i>Salsify.</i>
Fruits at centre of capitulum with sessile pappus of hairs.	Fruits at centre of capitulum with sessile pappus of hairs.	Fruits at centre of capitulum with sessile pappus of hairs.		XLIII. <i>Lactuca</i> L., p. 104. <i>Lettuce.</i>
Fruits at centre of capitulum with sessile pappus of hairs.	Fruits at centre of capitulum with sessile pappus of hairs.	Fruits at centre of capitulum with sessile pappus of hairs.		XLVI. <i>Barkhausia</i> Meench, p. 105. <i>Barkhausia.</i>

Fruits at centre of capitulum with sessile pappus of hairs. [See opposite page.

Fruits at centre of capitulum with
seesile pappus of hairs T.



Fruit 8-10 mm.
long;



[Fig. SC, natural size.]

leaves entire SH or
deeply lobed.



Involucre of bracts in several whorls,
outer ones spreading or reflexed P;



plant very coarse, hispid; fruit
striated transversely.

Leaves sharply
toothed SA;



fruit compressed.

[SA, fragment of leaf.

Leaf-base
sheathing.

Leaves not
sharply toothed;
fruit
cylindrical.

Lower leaves usually less than 3 cm. broad;
base of upper leaves not heart-shaped.

Lower leaves usually 4-5 cm. broad; base of
upper leaves heart-shaped.

[See L. Hieracium.]

Fruit
2-6 mm.
long.
Bracts of
involucre
not
spreading.

Fruits of 2 kinds, outer ones
without pappus TH, inner
ones with pappus T.



Leaf-base
not
sheathing.

Leaves usually toothed and all radi-
cal L; fruit narrowed at apex;
receptacle not distinctly pitted.



Fruits
all with
pappus.

Fruit not narrowed at
apex; receptacle distinctly
pitted HI.



XLIV. *Scorzonera*
L., p. 104.
Scorzonera.

XLII. *Picris* L.,
p. 104.
Picris.

XLV. *Sonchus* L.,
p. 104.
Southistle.

XLVII. *Crepis* L.,
p. 105.
Crepis.

XLVIII. *Thrinacia* Roth,
p. 105.
Thrinacia.

XLIX. *Leontodon*
L., p. 106.
Hawkbit.

L. *Hieracium*
L., p. 106.
Hawkweed.

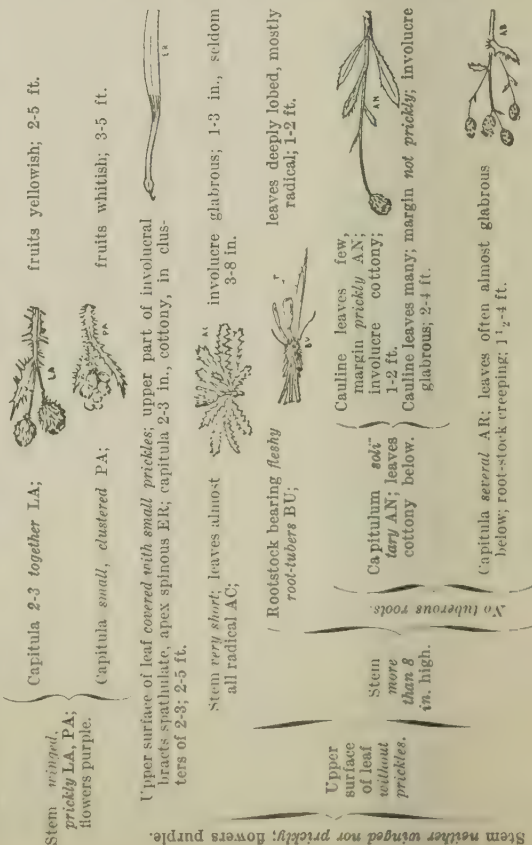
I. *Echinops* L. *Echinops*.—(Fig. E, p. 89.)

Capitulum solitary; florets all tubular, united in a globular head, bluish-white; 2½-5 ft.

II. *Carlina* L. *Carlina*.—(Fig. C, p. 89.)

Inner bracts of involucre pale-yellow, spreading; lobes of leaf few; heads yellowish.

III. *Cirsium* Hill. *Plume Thistle*.—(Fig. CE, p. 89.) The Artichoke, *Cynara Scolymus* L. ♀, flowers blue, is closely allied to this genus.



Stem neither winged nor prickly; flowers purple.

1. *E. sphærocephalus* L.
Globe Thistle.
Cultivated: July-Aug. P.

1. *C. vulgaris* L. ♀
Carlina Thistle.
Dry pastures; roadsides:
July-Sept. B.

1. *C. lanceolatum* Scop.
Sp. ar Plume Thistle, VC.
Waste places; roadsides:
June-Sept. B.

2. *C. palustre* Scop.
Marsh Plume Thistle, C.
Marshy places: June-Sept. B.
3. *C. eriophorum* Scop.
Woolly-headed Plume Thistle, Loc.
Stony places: June-Sept. B.

4. *C. acaule* All.
Dwarf Plume Thistle.
Dry pastures: July-Sept. P.
5. *C. tuberosum* All.
Tuberous Plume Thistle.
VR.
Damp shady places: June-Aug. P.

6. *C. anglicum* DC.
Meadow Plume Thistle.
Marshes; wet meadows: June-Aug. P.

7. *C. heterophyllum* Hill.

Melancholy Plume Thistle.
Mountain pastures: July-Aug. F.

8. *C. arvense* Scop.
Creeping Plume Thistle.
VC.
Waste and cultivated places:
June-Sept. B. or P.

IV. *Silybum Gærtm. Silybum*.—(Fig. SM, p. 89.)

Leaves veined white along nerves, amplexicaul; capitulum solitary, globular, drooping, purple; 1-5 ft.

V. *Onopordon L. Onopord*.—(Fig. O, p. 89.)

Stem and leaves cottony; leaves coarsely toothed; branches few; involucre bracts narrow; florets purple; 2-7 ft. [Scotch Thistle.]

VI. *Carduus L. Thistle*.—

Capitula solitary, rarely in twos, drooping, 1-2 in. in diameter; peduncles long; involucre bracts narrowed in upper half, apices prickly N; 1½-3 ft.

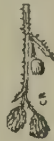


Capitula not solitary TE, CR, diameter less than 1 in., peduncles short.

Upper part of stem narrower than wings TE; bracts with bright dots towards the middle; fruits brown; 1-3 ft.



Upper part of stem broader than wings CR; bracts with no bright dots; fruits gray; 1-4 ft.

VII. *Centaurea L. Centaurea*.—

Involucre bracts spinous CA.



Spines unequal, middle one long.

Heads solitary, terminal; florets yellow; stem broadly winged SO; 1-2½ ft.



Heads sessile, axillary; spines all spreading CA; florets rose-purple, seldom white; stem not winged CL; 1-2 ft.

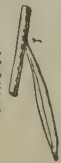


Spines nearly equal, small; heads terminal, solitary; florets purple; 1-2 ft.

Florets blue, seldom white, outer row large and spreading; pappus about as long as fruit CC; upper leaves entire, lower ones usually toothed or lobed; 1-2 ft. [Cornflower.]



Upper leaves entire J.



Pappus absent; inner bracts entire; florets spreading; 1-2 ft. Pappus usually present, short, deciduous; inner bracts pectinate, black or brown; florets not spreading; ½-3 ft. [Hardhead.]



Involucre bracts not spinous.

Leaves all deeply cut SC; heads large; outer florets spreading, large, neuter; 1½-3 ft.

*1. *S. Marianum Gærtm.*

Milk Thistle. R.

Waste places; June-Aug. A. or B.

1. *O. Acanthium L.*

Cotton Thistle.

Waste places; July-Sept. B.

1. *C. nutans L.*

Musk Thistle.

Waste ground; May-Sept. B.

2. *C. tenuiflorus Curt.*

Slender Thistle.

Dry waste places near sea; June-Aug. A. or B.

3. *C. crispus L.*

Wetted Thistle.

Roadsides; June-Aug. B.

*1. *C. solstitialis L.*

Yellow Star Thistle. R.

Corn-fields; July-Sept. A. or B.

2. *C. Calcitrapa L.*

Star Thistle. R.

Waste places; July-Sept. B.

3. *C. aspera L.*

Guernsey Star Thistle.

Waste places; June-Sept. P.

4. *C. Cyanus L.*

Corn Bluebottle.

Corn-fields; June-Aug. A. or B.

5. *C. Jacea L.*

Pastures; July-Sept. P.

6. *C. nigra L.*

Knapped. VC.

Meadows; hedges; June-Sept. P.

7. *C. Scabiosa L.*

Great Knapped.

Pastures roadsides; July-Sept. P.



VIII. *Serratula* L. *Sav-wort*.—(Fig. ST, p. 91.)

Leaf-lobes finely toothed, glabrous or slightly rough below; heads long in terminal corymb; florets rose-purple.

IX. *Saussurea* DC. *Saussurea*.—

Leaves cottony below; heads in dense terminal corymb, purplish, fragrant like Heliotrope; 3-12 in.

X. *Arctium* L. *Burdock*.—(Fig. LA, p. 91.)

Leaves bearing short hairs, lower ones heart-shaped at base; florets purple. $\left\{ \begin{array}{l} \text{Capitula more than } \frac{3}{4} \text{ in., glabrous, almost globular; petioles angular, solid; 2-4 ft.} \\ \text{Capitula less than } \frac{3}{4} \text{ in., cottony, more ovoid; petioles rounded, hollow; 2-3 ft.} \end{array} \right.$

XI. *Bidens* L. *Bidens*.—(Fig. B, p. 89.)

Florets greenish- or brownish-yellow. $\left\{ \begin{array}{l} \text{Leaves more or less deeply 3-lobed TR; fruit with minute prickles pointing downwards;} \\ \text{Leaves not lobed CE, connate; fruit 2-edged;} \end{array} \right.$



pappus bristles 2; 8-28 in.

XII. *Galinsoga* R. and P. *Galinsoga*.—

Leaves simple, toothed; ray-florets white, disc-florets yellow; $\frac{1}{2}$ -2 ft.

XIII. *Helianthus* L. *Helianthus*.—

Underground stem with tubers; capitulum erect; 3-6 ft.

Underground stem without tubers; capitulum drooping; 3-6 ft.

XIV. *Aster* L. *Aster*.—The Michaelmas Daisies belong to this genus, and occasionally occur as escapes. The China

Asters are closely allied.

Plant glabrous; heads in corymbs. $\left\{ \begin{array}{l} \text{Florets ligulate and tubular; involucre bracts adpressed TR; leaves succulent; 1-2 ft.} \\ \text{Florets all tubular, yellow; bracts many, adpressed; leaves thin, narrow, numerous; stem slender, rigid; 1-2 ft. (Fig. LV, p. 91.)} \end{array} \right.$

1. *S. tinctoria* L.

Common Sav-wort.
Thickets; July-Sept. P.

1. *S. alpina* DC.

Alpine Saussurea.
Mountains; July-Sept. P.

1. *A. Lappa* L.

Great Burdock.
Roadsides; woods; July-Aug. B.

2. *A. minus* Bernh.

Small Burdock.
Roadsides; woods; July-Aug. B.

1. *B. tripartita* L.

Three-cleft Bur Marigold.
Wet places; Aug.-Sept. A.

2. *B. cernua* L.

Bur Marigold.
Wet places; Aug.-Sept. A.

*1. *G. parviflora* Cav.

Peruvian Galinsoga.
Escape, Kew; July-Sept. A.

*1. *H. tuberosus* L. ✕

Jerusalem Artichoke.
Cultivated; Sept.-Oct. P.

*2. *H. annuus* L. ✕

Sun-flower.
Cultivated; July-Sept. A.

1. *A. Trifolium* L.

Sea Aster.
Salt marshes; July-Sept. P.

2. *A. Linosyris* Bernh.

Goldilocks. R.
Limestone cliffs; Aug.-Oct. P.

XV. *Bellis* L. Daisy.—(Fig. B, p. 90.)

Leaves broad towards apex, crenate; capitula solitary; fruits hispid; 2-6 in.

XVI. *Chrysanthemum* L. *Chrysanthemum*.—

Ray-florets yellow; leaves amplexicaul, teeth unequal; inner bracts broadly membranous; plant glabrous, glaucous; 1-1½ ft. (Fig. C8, p. 91.)

Leaves coarsely toothed VV; heads solitary, large;



ripe fruits black, ribs white; 4-32 in.

Leaves deeply lobed PA; heads smaller and in corymbs; plant odorless;



ripe fruits whitish or brown; 12-32 in.

XVII. *Matricaria* L. *Matricaria*.—

Receptacle solid M; leaf-lobes furrowed below I, IN; plant inodorous; 8-24 in.



Ray-florets present.

Receptacle hollow CH; leaf-lobes not furrowed MC, CA; faintly odorous of Chamomile; 8-24 in.



Ray-florets absent; peduncles short; cauline leaves many; bracts broadly membranous; 4-12 in.

XVIII. *Anthemis* L. *Chamomile*.—

Ray-florets yellow; leaves bipinnate, downy beneath; 6-24 in.

Leaves, or at least lower ones, glabrous or nearly so; scales between flowers very narrow CT; odour strong, disagreeable; 8-20 in.



[Mayweed.]

Scales between flowers often toothed in upper part, apex not rigid or acute N; ripe fruit greenish, ribs 3, white; aromatic; 4-12 in.



Leaves more or less hairy.

Scales between flowers rigid and acute at apex A; fruit 10-ribbed; 8-20 in.

**1. *B. perennis* L.**

Daisy. VC.

Pastures: Feb.-Nov. P.

1. *C. segetum* L.

Corn Marigold. C.

Corn-fields: June-Sept. A.

2. *C. Leucanthemum* L. ✕

Ox-eye Daisy. C.

Fields; banks: May-Aug. P.

3. *C. Parthenium* Bernh.

Feverfew.

Roadsides; waste places: July-Sept. P.

1. *M. inodora* L.¹

Seedless Matricary.

Fields; waste places: June-Oct. A.

2. *M. Chamomilla* L. ✕

Wild Chamomile.

Fields; waste places: June-Aug. A.

***3. *M. discoidea* DC.**

Rayless Matricary.

Waste places: June-Aug. A.

***1. *A. tinctoria* L.**

Yellow Chamomile. P.

Waste places: July-Aug. P.

2. *A. Cotula* L.

Fetid Chamomile.

Fields; waste places: June-Sept. A.

3. *A. nobilis* L. ✕

Common Chamomile. Loc.

Sandy fields: July-Sept. P.

4. *A. arvensis* L. R.

Corn Chamomile.

Fields: June-Aug. A.

1. Var. *maritima* L.: leaves fleshy leathery above, lobes short; sea-coasts.

XIX. Eupatorium L. Eupatory.—(Fig. EU, p. 89.)

Florets all tubular, 5-6 in capitulum; leaves deeply 3-5 lobed, toothed; fruits with pappus; 2½-4 ft.

XX. Tus-silago L. Coltsfoot.—(Fig. F, p. 90.)

Outer florets ligulate, very narrow; fruits with pappus; leaves large, broadly cordate at base, angular, white and downy below; 4-8 in.

XXI. Petasites Hill. Petasites.—(Fig. PV, p. 90.)

Heads pink; leaves very large, a few inches to 3 ft., cordate, toothed, downy below; plants almost diœcious; 8-16 in.

Heads white.

Pistillate flowers ligulate, short; plant fragrant; 6-12 in.

Leaves smaller, margin deeply curved, white below; 6-12 in.

XXII. Calendula L. Marigold.—(Fig. CA, p. 90.)

Leaves hairy, entire or slightly lobed, lowers ones petiolate; 4-16 in.

XXIII. Doronicum L. Doronic.—

Lower cauline leaves oval, long and narrow at base PL; heads solitary; plant almost glabrous; 2-3 ft.



Stem leaves broader, rounded at base, lower ones amplexicaul; heads usually 3-5; plant very hairy; 2-3 ft.

XXIV. Senecio L.¹ Senecio.—

Radical leaves more or less spatulate L; plant white, downy.

Lower part of leaf very narrow L;

1-3 ft.

Lower part of leaf broader; 6-15 in.



1. E. cannabinum L. ♀
Hemp Agrimony.

Damp, shady places; river banks; marshes: July-Sept. P.

1. T. Fariara L. ♀
Coltsfoot. C.

Waste places, damp clay soils: Mar.-Apr. P.

1. P. vulgaris Desf. ♀
Butter-bur.

Marshy ground: Mar.-Apr. P.

***2. P. fragrans Presl.**

Wet waste places: Apr.-May. P.

***3. P. albus Gærtn. P.**

Waste places Mar.-May. P.

***1. C. arvensis L. ♀**
Marigold.

Cultivated: Feb.-Oct. A.

***1. D. plantagineum L.**
Plantain Doronic. R.

Woods; escape: May-June. P.

***2. D. Pardalianches L.**
Leopard's-bane. R.

Woods; escape: May-June. P.

1. S. spathulæfoliu DC.
R.

Cliffs; rocks: June-July. P.

2. S. campestris DC.

Field Senecio.
(chalk downs: May-June. P.)



Leaves *coarsely toothed*, somewhat sinuate
P.L; plant covered with loose down,
grey; 2-4 ft.



Leaves sharply serrate, *white and
cottony* below; stem hollow;
2½-5 ft.

Leaves irregularly serrate; *glabrous*; stem solid; 2-5 ft.



Plant covered with *viscid glandular hairs* VI; outer bracts of involucre
usually more than one-third length of others; 8-32 in.



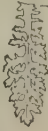
Outer bracts 8-10, *apex black* VU; heads in close
clusters; leaf-lobes almost equal; 4-12 in.



Outer bracts 4-5, *apex not black* S; heads
in loose corymbs; leaf-lobes very un-
equal; 1-2½ ft.



Outer bracts *many, half as long as inner* E; leaves downy
beneath, lobes narrow; 2-4 ft.



Leaves *deeply lobed* JA; disc-
fruits hairy; 2-4 ft.
[Ragwort].



Leaves deeply lobed, *upper
segment large* AQ;
glabrous; 2-3 ft.

Leaf lobes jagged; fruits silky; 1-2 ft.



Outer bracts 2-5, *very
short* J.

Capitulum *cylindrical or
narrowed above* VU, S;
ligulate florets scarcely
or not developed; plants
annual.

Capitulum
widely open
f, E; ligulate
florets
spreading;
plants
usually
perennial.

Plant not glandular or viscidous.

Leaves deeply lobed.

3. *S. palustris* DC.
Marsh Senecio. VR.
Fens: June-July. A. or B.

4. *S. paludosus* L.
Fen Senecio. VR.
Fens: June-July. P.

*5. *S. sarracenicus* L.
Broad-leaved Senecio. R.
Damp places: June-July. P.

6. *S. viscosus* L.
Viscid Senecio. Loc.
Waste places: July-Sept. A.

7. *S. vulgaris* L.
Groundsel. VC.
Waste places; walls: Jan.-Dec. A.

8. *S. sylvaticus* L.
Wood Senecio.
Sandy, shady places: July-
Sept. A.

9. *S. erucifolius* L.
Narrow-leaved Senecio.
Roadsides; thickets: July-
Sept. P.

10. *S. Jacobæ* L. ✕
Ragwort Senecio. C.
Roadsides; waste places: June-
Sept. P.

11. *S. aquaticus* Huds.
Water Senecio.
Wet places: July-Aug. P.

*12. *S. squalidus* L.
Squalid Senecio. Loc.
Walls: June-Sept. A. or P.

1. **S. Cineraria* DC.: leaves white and felted beneath, a Mediterranean species and garden escape, occurs on sea cliffs.

XXV. *Achillea* L. *Achillea*.—

Leaves all pinnate, segments deeply cut AM;



heads numerous; ligulate florets 4-6; 8-24 in. [Yarrow.]

Leaves simple, finely toothed AP;



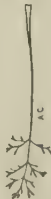
heads few; ligulate florets 8-12; 16-24 in.

XXVI. *Cotula* L. *Cotula*.—

Leaves succulent, amplexicaul, long and narrow or lobed; heads small resembling a disc; 4-12 in.

XXVII. *Artemisia* L. *Artemisia*.—

Involutee glabrous, shiny; leaves pinnate, segments linear AC,



at first hairy, then glabrous; heads drooping; 1-3 ft.

Leaf-segments not fine AB, VI.

Receptacle smooth; heads erect.

Plant greyish-white, silky; leaves much divided AB; receptacle hairy; heads drooping; 16-36 in. [Wormwood.]



Plant white, woolly; leaf-segments broad, obtuse; 1-2 ft.

Leaves green and glabrous above, white below; segments broad, acute VU; 2-4 ft.



Leaf segments fine MA, woolly; stem glabrous; odour strong, disagreeable; 8-16 in.

XXVIII. *Diotis* Desf. *Diotis*.—

Leaves sessile, thick, length $\frac{1}{4}$ in.; heads small; corymbs terminal; 6-12 in.

XXIX. *Tanacetum* L. *Tansy*.—(Fig. TV, p. 91.)

Leaves pinnate; leaflets deeply cut; involucre glabrous; bracts membranous at apex; corymb of heads terminal; 2-3 ft.

1. *A. Millefolium* L. H
Milfoil. C.
Roadsides; pastures; June-Sept. P.

2. *A. Ptarmica* L. H
Sneezewort. C.
Damp places; July-Sept. P.

*1. *C. coronopifolia* L.
R.

Waste places; July-Aug. A.

1. *A. campestris* L.
Field Artemisia. Loc.
Heaths and stony ground;
Aug.-Sept. P.

2. *A. Absinthium* L. H
Absinth.

Waste ground; July-Sept. P.

*3. *A. Stelleriana* Bess.
R.

Sea-shore; July-Sept. P.

4. *A. vulgaris* L. H
Mugwort. C.

Waste places; roadsides; July-Sept. P.

5. *A. maritima* L.

Sea Artemisia.

Sea-shore; Sept.-Oct. P

1. *D. maritima* Cass.
Sea Cotton Weed. WR.

Sea-shore; Aug.-Sept. P.

1. *T. vulgare* L. H
Common Tansy.

Hedges; waste places; Aug.-Sept. P.

XXX. *Gnaphalium* L. *Cudweed*.—

Capitula in a leafy spike long, interrupted GS; bracts brown at apex; leaves usually cottony on under surface; 8-24 in.

Leafy spike shorter, closer; florets longer relatively to bracts; bracts dark brown; leaves 3-nerved, cottony on both surfaces; 6-12 in.

Upper leaves much longer than capitula GA, U.

Leaves very narrow GA; stem much forked;

Leaves oblong, broader towards apex U; stem much branched; florets yellow; 4-8 in.

Leaves usually green above, cottony below; flowers usually dioecious.

Stem herbaceous, procumbent; lower leaves in a rosette D; capitula few; pink or whitish; 4-8 in. [Cat's-foot.]

Stem shrubby, erect; no rosette of leaves; capitula numerous, yellowish or brownish-white; 1-3 ft.

Plant perennial; stem decumbent; leaves tufted; capitula few, brown; 1-4 in.

Bracts glabrous, almost quite membranous LU;

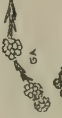
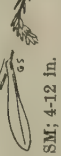
Apex of bract long, acute SP, yellowish; capitula 10-30 in a cluster.

Apex of bract not long and yellowish M, AR; capitula 2-8 in a cluster.

Plant annual. Bracts yellowish. Leaves cottony; capitula yellowish.

Leaves cottony on both surfaces.

Upper leaves little if any longer than capitula. Capitula in small clusters CA, D, IA, SM, cottony.



1. *G. sylvaticum* L. *Wood Cudweed*. Woods; heaths: July-Sept. P.
2. *G. norvegicum* Gunn. *Alpine Cudweed*. VR. Rocks: July-Sept. F.
3. *G. gallicum* Huds. *Narrow-leaved Cudweed*. VR.

Fields: July-Sept. A.

4. *G. uliginosum* L. *Marsh Cudweed*. C. Moist places: July-Oct. A.

5. *G. dioicum* L. *Mountain Everlasting*. Heaths; dry pastures: June-July. P.

- *6. *G. margaritaceum* L. *Pearly Everlasting*. R. Moist meadows; gardens: Aug-Sept. P.

7. *G. supinum* L. *Dwarf Cudweed*. Rocks: July-Sept. P.

8. *G. luteo-album* L. *Jersey Cudweed*. R. Sandy places: July-Sept. A.

9. *G. germanicum* Willd. *Upright Cudweed*. C. Dry fields: June-Sept. A.

10. *G. spathulatum* B. and de L. *Prostrate Cudweed*. Loc. Dry fields: July-Sept. A.

11. *G. arvense* Willd. *Field Cudweed*. Dry fields: July-Sept. A.

12. *G. minimum* B. and de L. *Dwarf Cudweed*. Dry soils: June-Sept. A.

XXXI. *Helichrysum* Willd. *Helichrysum*.—(Fig. HE, p. 91.)

Plant hairy, whitish, some basal branches non-flowering; involucre glabrous: 8-12 in.

XXXII. *Erigeron* L. *Erigeron*.—

Involucre almost glabrous C, bracts with membranous margins;



outer florets yellowish-white; 1-2 ft.



Involucre very hairy A;

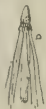
outer florets purple, short; 4-16 in.

[Blue Fleabane.]

Heads usually solitary; involucre hairy; outer florets purple, long: 2-8 in.

XXXIII. *Inula* L. *Inula*.—

Leaves wared at margin; pappus surrounded by membranous crown D.



Leaves amplexicaul, 2-lobed at base DY;



ray longer than involucre; 16-32 in.

Leaves rounded at base V;



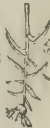
ray shorter than involucre; 4-20 in.

Leaves long and broad, about 12 in. \times 7 in., white below, toothed, amplexicaul; outer bracts oval HE, very hairy; 3-5 ft.



Leaves glabrous or only slightly downy below.

Leaves flat, not succulent, sessile and semi amplexicaul towards middle of stem SA; 1-2 ft.



Leaves thick, succulent, linear; 6-18 in.

Leaves hairy.



bracts narrow, acute; 12-32 in.

Leaves less than 4 in. broad, slightly or not toothed.

Upper leaves completely amplexicaul B;

Leaves semi-amplexicaul or not at all; bracts almost glabrous, reflexed CO; fruit hairy; 2-4 ft.

XXXIV. *Solidago* L. *Golden Rod*.—(Fig. SO, p. 91.)

Bracts of involucre yellowish-green; leaves radical and cauline, mostly petiolate, lanceolate; heads in terminal compound raceme; 1-3 ft.

1. *H. arenarium* DC.
Gardens: July-Oct. P.

* 1. *E. canadensis* L.
Canadian Erigeron.
Waste places: July-Sept. A.

2. *E. acris* L.
Fleabane Erigeron.
Pastures; dry places: July-Sept. B.

3. *E. alpinus* L.
Alpine Erigeron. VR.
Mountains: July-Aug. P.

1. *I. dysenterica* L. \star
Fleabane Inula.
Wet pastures; ditches: July-Sept. P.

2. *I. Pulicaria* L.
Small Fleabane. Loc.
Wet places: July-Sept. A.

3. *I. Helenium* L. \star
Elecampane. R.
Moist pastures: July-Sept. P.

4. *I. salicina* L.
Willow-leaved Inula. VR.
Moist shady places: July-Aug. P.

5. *I. crithmoides* L.
Golden Samphire.
Salt marshes; rocks near sea: July-Aug. P.

* 6. *I. britannica* L.
Damp waste places: July-Sept. P.

7. *I. Conyza* DC.
Ploughman's Spikenard.
Chalky ground: July-Sept. B.

1. *S. Virga-aurea* L.
Common Golden Rod. C.
Dry, shady places: July-Sept. P.

XXXV. *Lapsana* L. *Lapsana*.—(Figs. L, L.C, p. 92.)

Lower leaves with large terminal segment; heads yellow, small; involucre glabrous; 8-32 in.

XXXVI. *Arnoseris* Gärtn. *Arnoseris*.—(Fig. AM, p. 92.)

Leaves all in a rosette at base, sharply toothed; peduncles hollow, enlarged towards apex; heads pale yellow; 4-8 in.

XXXVII. *Cichorium* L. *Chicory*.—(Fig. C, p. 92.)

Radical and lower cauline leaves with large, acute, terminal segment; upper cauline leaves amplexicaul, less lobed; main nerves very hairy; heads nearly sessile, usually axillary and in pairs; $1\frac{1}{2}$ -3 ft. [Succory.]

XXXVIII. *Taraxacum* Juss. *Dandelion*.—(Fig. T, p. 92.)

Leaves in rosette, spreading, almost entire or deeply toothed, teeth triangular; flowers yellow; outer bracts recurved; 4-12 in.

XXXIX. *Hypochaeris* L. *Cat's-ear*.—

Leaves *glabrous*, slightly toothed

HG;



outer fruits not beaked; 6-10 in.

Stem glabrous.
Flowers yellow.

Involucre covered with black hairs HM;



capitulum $1-1\frac{1}{2}$ in. in diameter; leaves nearly entire or coarsely toothed, often with reddish spots; 1-2 ft.

Involucre almost or quite glabrous HR; fruits all beaked;



capitulum about in. in diameter; leaves deeply toothed or lobed; 1-2 ft.

XL. *Tragopogon* L. *Salsify*. [Goat's Beard].—

Involucral bracts 6-8 about as long as florets;



peduncle scarcely thickened below capitulum TP; 16-48 in. [Johnny-go-to-bed-at-Noon.]

Heads yellow.

Involucral bracts 8-12, longer than florets TM; peduncle distinctly enlarged below capitulum TM; 1-2 ft. [Johnny-go-to-bed-at-Noon.]



Heads purple, large; peduncle distinctly thickened below capitulum; 1-3 ft. [Salsify.]

XLI. *Helminthia* Juss. *Helminth*.—(Fig. H, p. 92.)

Outer bracts leaf-like, heart-shaped at base; plant covered with stiff prickly hairs; florets yellow; 1-3 ft.

1. *L. communis* L. *Nippelaort*.—

Waste places; July-Sept. A.

1. *A. minima* Koch
Lamb's or Swine's Succory. R.

Dry fields; June-Aug. A.

1. *C. Intybus* L. *Chicory*.

Dry places; July-Oct. P.]

1. *T. Dens-leonis* Desf. *Common Dandelion*. VC.

Cultivated and waste places; Apr.-Oct. P.

1. *H. glabra* L. *Glabrous Hypochaeris*.

Heathy places; June-Aug. A.

2. *H. maculata* L. *Spotted Hypochaeris*. VR.

Hilly shady places; June-Aug. P.

3. *H. radicata* L. *Cat's-ear*. VC.

Roadsides; pastures; June-Sept. B. or P.

1. *T. pratensis* L. *Meadow Salsify*.

Meadows; May-July. B.

2. *T. minus* Mill. *Small Meadow Salsify*.

Meadows; June-July. B.

*3. *T. porrifolius* L. *Purple Salsify*.

Meadows; cultivated; May-July. B.

1. *H. echinoides* Gärtn. *Ox-tongue*.

Hedges; fields; July-Oct. A.

1. *C. Endivia* L. *Endive*, upper leaves oval, heart-shaped at base, is often cultivated [Bleached Dandelion, or Barbe-de-Capucin, when cultivated in the dark].—2. Var. *isorigatum* DC., bracts with 2 teeth; var. *palustre* DC., leaves long, entire or slightly toothed; outer bracts not reflexed.—3. Var. *Baibis* L., fruits all beaked, R.; var. *erostis* Coss. and Germ., fruits all without beak, R.

XLII. Picris L. *Picris*.—(Fig. P, p. 93.)

Lower leaves wavy; outer bracts narrow; plant coarse, hispid; florets much longer than involucre, yellow; 2-3 ft.

XLIII. Lactuca L.¹ *Lettuce*.—

Capitulum of 5 florets; involucre of 5 equal linear bracts, and 2-3 small outer bracts M; florets yellow;



beak of fruit short; upper leaves narrow, amplexicaul; plant glabrous; 20-36 in.

Leaf-margin and midrib smooth; auricles of median leaves acute SA;



beak twice as long as fruit; stem seldom prickly at base; 1-3 ft.

Capitulum of more than 5 florets, yellow. Leaf-margin and midrib with stiff hairs; auricles of median leaves rounded SC; beak as long as fruit; stem prickly at base.



Leaves deeply cut SC; upper leaves erect; 2½-5 ft.

Leaves more or less deeply toothed; upper leaves spreading 2½-5 ft.

XLIV. Scorzonera L. *Scorzonera*.—(Figs. SC, SH, p. 93.)

Bracts of involucre large, few; heads several on one stalk, yellow; fruit glabrous; 1-4 ft.

XLV. Sonchus L. *Southistle*.—

Leaves with pointed auricles OL; fruit transversely wrinkled; 1-3 ft.



Involucre and peduncle nearly glabrous.

Leaves with rounded, very prickly auricles AS; fruit not transversely wrinkled; 1-3 ft.



Heads yellow.

Leaves with rounded auricles AR; heads 1-2 in. diameter, bright yellow; 2-4 ft.



Involucre and peduncle with glandular hairs.

Leaves with acute auricles PA; heads usually under 1 in., lemon-yellow; 3-9 ft.



Heads blue; leaves similar to those of *S. oleraceus*; involucre and peduncle with glandular hairs; 2-3 ft.

1. **P. hieracioides L.**
Hawkweed Picris.
Dry waste places: July-Sept. B.

1. **L. muralis Fresen.**
Wall Lettuce.
Old walls: July-Sept. A.

2. **L. saligna L. R.**
Willow Lettuce.
Dry ground: June-Aug. B.

3. **L. Scariola L. H**
Prickly Lettuce. R.
Waste places: June-Aug. B.

4. **L. virosa L. H**
Acrid Lettuce. R.
Waste places: June-Aug. B.

1. **S. hispanica L. H**
Black Salsify.
Cultivated: June-July. B.

1. **S. oleraceus L.**
Common Southistle. C.
Waste and cultivated ground: June-Aug. A.

2. **S. asper Vill.**
Prickly Southistle. C.
Waste places: June-Aug. A.

3. **S. arvensis L.**
Corn Southistle. C.
Corn-fields; waste places: Aug-Oct. P.

4. **S. palustris L.**
Marsh Southistle. VR.
Marshes: July-Aug. P.

5. **S. alpinus L.**
Alpine Southistle. VR.
Rocks: June-Aug. P.

XLVI. *Barkhausia* Mœnch. *Barkhausia*.—

Plant with strong odour of bitter almonds when bruised;

No strong odour; beaks all of one length S.



Involucral bracts with black glandular hairs TA; leaves very hairy,



Involucral bracts with stiff hairs, not glandular SE; leaves nearly glabrous; 1-2 ft.



1. **B. foetida** DC. R.
Dry waste places: June-Aug.
A. or B.

2. **B. taraxacifolia** DC.
Dry or wet places: June-July. B.

*3. **B. setosa** DC. R.
Cultivated ground: June-Aug.
A. or B.

XLVII. *Crepis* L. *Crepis*. [Hawksbeard.]—

Black glandular hairs of involucre elongated; pappus reddish; leaves glabrous; 8-20 in.

Heads yellow; involucre hairy, hairs white intermixed with black ones.

Black and white hairs of involucre equal in length; pappus white.

Bracts glabrous within, adpressed VI; leaves almost glabrous; 4-32 in.



Upper leaves narrow, margin revolute, auricles acute T; leaves almost glabrous; 12-20 in.



Upper leaves deeply toothed or lobed, leaves hispid; 2-4 ft.



1. **C. paludosa** Mœnch
Marsh Crepis ?
Damp shady places: June-Sept. P.

2. **C. virens** L.³
Smooth Crepis. C.
Pastures; waste places: June-Sept. A.

*3. **C. tectorum** L. VR.
Old walls: May-July. B.

4. **C. biennis** L. R.
Rough Crepis. R.
Waste places: June-July. B.

XLVIII. *Thrinia* Roth. *Thrinia*.—(Figs. T, TH, p. 93.)

Leaves all radical, hairy; involucre glabrous, bracts many in several whorls; capitulum solitary; florets yellow; 2-9 in.

1. **T. hirta** Roth. Loc.
Dry places: July-Aug. P.

1. *L. sativa* L. \times , with obtuse leaves, is often cultivated.—2. Var. *diffusa* DC., stem much branched, leaves almost entire.

AMBROSIACEÆ. The Burweeds are so closely allied to the *Compositæ* that some botanists consider them as members of that natural order.

I. Xanthium L. Burweed.—

Leaves without spines X, greyish-green below; 12-32 in.

Leaves with spines S, whitish below; 8-24 in.



CAMPANULACEÆ.

Lobelia is poisonous. The roots of *Campanula Rapunculus* and *Phyteuma spicatum* are edible. Several *Lobelias* and *Campanulas* are ornamental plants.

Corolla irregular, 2-lipped, upper lip 2-lobed, lower lip 3-lobed; anthers closely coherent. (Fig. D, p. XXIV.)

Corolla regular.		Lobes of corolla long, narrow.	Leaves sessile J; anthers united in a ring at base; fruit elongated.		fruit opening by 3 valves.
		Lobes of corolla short, broad, anthers free.	Lower leaves petiolate; anthers free; fruit inflated.		
		Leaves longer than broad; fruit opening by lateral pores.	Leaves as broad as long W; Corolla bell-shaped (Figs. G, R, P, p. 108); ovary an inverted cone. Corolla not bell-shaped (Figs. H, S, p. 108); ovary oblong.		

I. Lobelia L. Lobelia.—

Leaves submerged, mostly radical, almost cylindrical, hollow; flowers pale blue, raceme rising above water; 8-28 in.

Leaves not submerged, radical and cauline, lanceolate, slightly toothed; flowers blue, raceme erect; 1-2 ft.

II. Jasione L. Jasione.—(Fig. J, above.)

Flowers in a globular umbel, almost a capitulum, blue, seldom white; leaves hairy; 8-16 in.

III. Phyteuma L. Rampon.—

Lower cauline leaves heart-shaped at base; flowers whitish or bluish in a cylindrical spike P8; 20-28 in.

Lower cauline leaves not heart-shaped at base; flowers blue in globular head P0; 8-24 in.



*1. *X. strumarium* L. R. Waste places: July-Sept. A.

*2. *X. spinosum* L. R. Waste places: July-Aug. A.

I. *Lobelia* L., p. 107. *Lobelia*.

II. *Jasione* L., p. 107. *Jasione*.

III. *Phyteuma* L., p. 107. *Rampton*.

IV. *Wahlenbergia* Schrad., p. 108. *Wahlenbergia*.

V. *Campanula* L., p. 108. *Campanula*.

VI. *Specularia Perst.*, p. 108. *Specularia*.

1. *L. Dortmanna* L. ✕ *Water Lobelia*. Shallow parts of mountain lakes: July-Aug. P.

2. *L. urens* L. *Acrid Lobelia*. R. Moist heaths: Aug.-Sept. P.

1. *J. montana* L. *Sheep's-bit*. Dry pastures: June-Sept. A. or B.

1. *P. spicatum* L. ✕ *Spiked Rampon*. Loc. Damp thickets: June-July. P.

2. *P. orbiculare* L. *Round-headed Rampon*. Loc.

Chalk downs: July-Aug. P.

1. Var. *astitilis* L., leaves glabrous or nearly so; V R.—2. Var. *littoralis* Fr.: branches numerous, slender, prostrate.

IV. *Wahlenbergia* Schrad. *Wahlenbergia*.—(Fig. W, p. 107.)

Plant glabrous; branches very slender, prostrate; flowers solitary on slender peduncles, pale blue, rarely white; 4-12 in.

V. *Campanula* L.¹ *Campanula*. [Bell-flower.]—

Flowers sessile, in a spike or head; sepals acute G;



lower leaves with long stalks; 8-20 ft.

{ Sepals very narrow at apex R, glabrous; leaves glabrous, upper ones narrow; 4-20 in.



[Scottish Bluebell.]

{ Lower leaves heart-shaped at base. }
 { Sepals ciliated; leaves hairy. }
 { Sepals erect T; }
 { Sepals reflexed RO; }



upper leaves triangular T; 2-4 ft.

{ Lower leaves ovate-lanceolate, toothed; sepals narrow, toothed, glabrous; 3-5 ft. }
 { upper leaves oval or lanceolate; 1-3 ft. }

{ Petals free throughout slender; 1-3 ft.



{ Petals free throughout 3/4 or 1/5 of their length. }
 { Flowers small, 1-2 cm.; stem hairy; sepals very narrow RA; 16-36 in. }



{ Flowers large, 3-4 cm.; stem glabrous; sepals enlarged at base P; 16-36 in. }



VI. *Specularia* Heist. *Specularia*.—

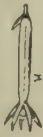
Corolla as long as calyx S;



flowers purple; 4-20 in.

[Venus' Looking-glass.]

Corolla shorter than calyx H;



flowers purple; 4-12 in.

[Venus' Looking-glass.]

1. *W. hederacea* Rchb. *Ivy Campanula*. Loc. Moist shady places; June-Aug. P.

1. *C. glomerata* L. *Clustered Campanula*. Dry chalky pastures; July-Aug. P.

2. *C. rotundifolia* L. *Harebell* or *Hairbell*. C. Dry hilly pastures; July-Sept. P.

3. *C. Trachelium* L. *Nettle-leaved Campanula*. Woods; thickets; July-Sept. P.

4. *C. rapunculoides* L. *Creeping Campanula*. R. Hedges; woods; July-Aug. P.

5. *C. latifolia* L. *Giant Campanula*. Thickets and woods; July-Aug. P.

6. *C. patula* L. *Spreading Campanula*. R. Hedges; thickets; July-Sept. B.

*7. *C. Rapunculus* L. *Rampion* or *Ramps*. R. Roadsides; July-Aug. B.

*8. *C. persicifolia* L. VR. Woods; cultivated; June-Aug. P.

1. *S. Speculum* Alph. DC. Gardens; June-Aug. A.

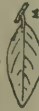
2. *S. hybrida* Alph. DC. *Corn Specularia*. Corn-fields; July-Sept. A.

VACCINIACEÆ.—

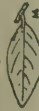
Corolla *globular or bell-shaped*; stems erect or procumbent; leaves usually more than 7 mm. broad. leaves less than 7 mm. broad.

Corolla *spreading*; petals separate almost to their base O; stems creeping.

I. *Vaccinium* L. *Whortleberry*.—

Leaves *pointed* at apex M,  deciduous;

flowers solitary, axillary, whitish or pinkish; fruit black, glaucous; 12-28 in.

Leaves *broadly rounded* at apex; flowers pink.  { Stem *glabrous* U; leaves not leathery, deciduous, pale-green above, glaucous below, margins *not revolute* U; fruit black, glaucous; 6-18 in.

Leaves *hairy* V; leaves very leathery, evergreen, shining above, dotted below, margins *revolute* V; fruit red; 4-8 in. [Cowberry.]

II. *Oxycoccus* Hill. *Cranberry*.—(Fig. O, above.)

Stems slender, much branched, { Leaves ovate or lanceolate, shining above, glaucous below, margins *revolute*; flowers *terminal*; fruit red, drooping. length variable; leaves small; } Leaves oblong, margins *not revolute*; flowers *axillary*. flowers rose.

ERICACEÆ. Many of the ornamental shrubs of gardens and shrubberies belong to this N.O., e.g. *Rhododendrons*, *Azaleas*.

Calyx and corolla 5 lobed.

Stamens 10.

Fruit a *berry*.

Fruit *not smooth*, resembling a strawberry, chambers 5, several seeded.

Fruit a *capsule*, 5-valved.

Fruit opening *mid-way between partitions*; flowers rose.

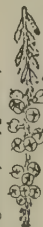
Fruit opening *along partitions*; flowers purplish-blue.

Stamens 5; fruit a capsule, 2-3 valved, valves bi-fid.

Calyx and corolla 4-lobed; *stamens* 8.

Corolla *persistent*. Corolla and calyx *deeply 4-lobed* C; calyx longer than corolla.

Corolla *4-toothed, globular*, longer than calyx. (Figs. EC, TE, p. 110.)



Corolla *deciduous*, ovoid, lobes short and spreading.

I. *Vaccinium* L., p. 109. *Whortleberry*.
II. *Oxycoccus* Hill, p. 109. *Cranberry*.

1. V. *Myrtillus* L. *Common Whortleberry*.
Heaths: Apr.-May. P. P.

2. V. *uliginosum* L. *Bog Whortleberry*. Loc. Bogs, mountains: May-June. P.

3. V. *Vitis-idaea* L. *Red Whortleberry*.
Heaths, mountains: June-July. P.

1. O. *palustris* Pers. *✕*
Peat bogs: July-Aug. P.
*2. O. *macrocarpus* Pers.
Peat bog: July-Aug. P.

I. *Arbutus* L., p. 110. *Arbutus*.

II. *Arctostaphylos* Adams, p. 110. *Bearberry*.

III. *Andromeda* L., p. 110. *Andromeda*.

IV. *Bryanthus* Gmel., p. 110. *Bryanthus*.

V. *Loiseleuria* Desv., p. 110. *Loiseleuria*.

VI. *Erica* L., p. 110. *Heath*.

VII. *Calluna* Salisb., p. 111. *Lang*.

VIII. *Borretta* Neck., p. 111. *Borretta*.

1. The *Canterbury-bell* belongs to this genus [*C. medium* L.].

I. *Arbutus* L. *Arbutus*.—

Shrub or small tree; leaves evergreen, lanceolate, sessile; flowers in panicles, terminal, greenish-white or pinkish; fruit red; 8-12 ft.

II. *Arctostaphylos* Adams. *Bearberry*.—

Stems woody, straggling; flowers few, small, in terminal racemes.

Leaves evergreen, shining, entire; flowers pink; fruit red; 4-24 in.

Leaves not evergreen, thin, toothed; flowers white; fruit black; 3-12 in.

III. *Andromeda* L. *Andromeda*.—

Leaves evergreen, oval, entire, margins revolute, white and glaucous below; racemes terminal; corolla ovoid V; plant glabrous; 4-16 in.


IV. *Bryanthus* Gmel. *Bryanthus*.—

Leaves evergreen, linear, bordered with minute glandular teeth; flowers large, purplish-blue; racemes short, terminal; 4-10 in.


V. *Lciseleuria* Desv. *Loiseleuria*.—

Stems procumbent; leaves evergreen, small, opposite, margins revolute; flowers small, rose, in short terminal clusters; 2-4 in.

VI. *Erica* L. *Heath*.—

Leaves and sepals glabrous.


 Anthers included within corolla, awned; leaves 3 in a whorl; flowers deep rose in terminal raceme EC; 1-3 ft.

Leaves and sepals glabrous.


 Anthers protruding from corolla, not awned.

Leaves and sepals ciliated TE, T; leaves 4 in a whorl; anthers included in corolla.



1. *A. Unedo* L.

Strawberry-tree. Woods: Sept.-Oct. P.

1. *A. Uva-ursi*. Spr.

Common Bearberry. Heaths, mountains: May-June. P.

2. *A. alpina* Spr.

Black Bearberry. R. Mountains: June-Aug. P.

1. *A. polifolia* L.

Marsh Andromeda. R. Peat bogs: June-July. P.

1. *B. cæruleus* Dip.

Blue Heath. VR. Mountain heaths: June-July. P.

1. *L. procumbens* Desv.

Loiseleuria. Loc. Highland mountains: May-July. P.

1. *E. cinerea* L.

Bell Heath. Moors; heaths: July-Sept. P.

2. *E. vagans* L.

Cornish Heath. Loc. Heaths: July-Aug. P.

3. *E. mediterranea* L.

Mediterranean Heath. Loc. Boggy heaths: Apr.-May. P.

4. *E. Tetralix* L.

Cross-leaved Heath. Damp heaths: July-Sept. P.

5. *E. ciliaris* L.

Ciliated Heath. R. Heaths: June-Sept. P.

VII. *Calluna* Salisb. *Ling.*—(Fig. C, p. 100.)

Leaves small, in 4 rows; calyx membranous, rose, sometimes white; corolla very small, hidden by calyx, rose or white; 12-32 in.

VIII. *Boretta* Neck. *Borella*.—

Branches decumbent; leaves white and cottony beneath; flowers large, purple or pinkish, sometimes white, drooping; racemes terminal, unilateral; 1-2 ft.

PYROLACEÆ.

Flowers in racemes.

Flowers solitary.

I. *Pyrola* L. *Winter-green*.—(Fig. PY, p. XXIII.)

Sepals lanceolate; style curved R;



flowers white; raceme 2-6 in. long; 8-16 in.

Sepals acute; flowers white. } Stamens as long as style; 8-12 in.

Sepals triangular; style straight or nearly so MI. } Stamens shorter than style; 8-12 in.



Sepals rounded, notched; flowers greenish-white; stamens shorter than style; 2-6 in.

II. *Moneses* Salisb. *Moneses*.—

Flowers terminal, drooping, white, fragrant; style straight or nearly so; stamens shorter than style; 1-3 in.

MONOTROPACEÆ.

The plants are saprophytic on the debris of branches and dead leaves.

I. *Monotropa* L. *Monotrope*.—(Fig. MO, p. XXI.)

Leaves whitish, in the form of scales on a succulent stem; raceme curved, later erect; flowers yellowish-white; 4-12 in.

1. *Var. arenaria* Koch; pedicel scarcely as long as calyx; sepals rounded at apex; dunes.

1. *C. vulgaris* Salisb. *Ling.* VC.

Dry heaths; moors: July-Sept. P.

1. *B. cantabrica* O. Kuntze.

St. Daboc's Heath. Loc. Heaths: July-Sept. P.

I. *Pyrola* L., p. 111.

Winter-green.

II. *Moneses* Salisb., p. 111. *Moneses.*

1. *P. rotundifolia* L., *P. R.* Round-leaved *Winter-green.*

2. *P. minor* L.

Common Winter-green.

Damp shady places: June-July. P.

3. *P. media* Sw.

Intermediate Winter-green. Loc.

Woods: June-Aug. P.

4. *P. secunda* L.

Serrated Winter-green. Loc.

Woods, mountains: July-Aug. P.

1. *M. grandiflora* Salisb.

One-flowered Winter-green. R.

Woods: July-Aug. P.

1. *M. Hypopitys* L.

Yellow Bird's-nest. Woods: June-Aug. P.

LENTIBULARIACEÆ. The shape of the corolla in this N.O. resembles that of certain members of the N.O. Scrophulariaceæ.

Leaves all *radical*, entire P; calyx 5-toothed.

Leaves *not radical*, much divided (Figs. V, U.M. below), floating; calyx 2-lobed.



I. *Pinguicula* L., p. 112.
Butterwort.


II. *Utricularia* L., p. 112.
Bladderwort.

I. *Pinguicula* L. *Butterwort.*—(Fig. P, above.)

Leaves in contact with soil, fleshy, viscid, margins revolute; flowers solitary.	Flowers <i>purplish-blue</i> ; spur long.	Corolla lobes <i>not in contact</i> ; flower $\frac{1}{2}$ - $\frac{3}{4}$ in.; 2-6 in.	1. <i>P. vulgaris</i> L. <i>Common Butterwort.</i> Bogs: May-July. P.
			2. <i>P. grandiflora</i> Lam. <i>Irish Butterwort.</i> Bogs: May-July. P.
			3. <i>P. alpina</i> L. <i>Alpine Butterwort.</i> VR. Bogs, mountains: June-July. P.
	Flowers <i>yellowish or purplish</i> ; spur short.	Spur <i>conical</i> , nearly straight; peduncle glabrous; 2-4 in.	4. <i>P. lusitanica</i> L. <i>Western Butterwort.</i> Bogs: June-Sept. P.
		Spur <i>cylindrical</i> , curved; peduncle hairy; 2-4 in.	

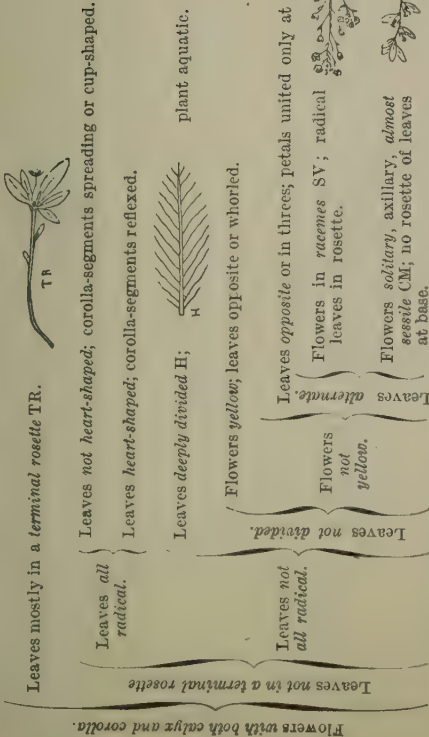
II. *Utricularia* L. *Bladderwort.*—

Leaf with <i>principal segments lateral</i> , alternate V, margin spinous;		corolla - spur adpressed, rounded at apex UV; peduncle 8-12 in.	1. <i>U. vulgaris</i> L. ¹ <i>Common Bladderwort.</i> Pools: June-Aug. P.
--	---	---	--

Leaf with <i>principal segments resembling the ribs of a fan</i> U.M.		Leaf-segments with small spinous teeth; corolla-spur <i>acute</i> UI; peduncle 4-8 in.	2. <i>U. intermedia</i> Hayne <i>Intermediate Bladderwort.</i> Loc. Pools: June-Aug. P.
		Leaf-segments <i>not spinous</i> ; corolla-spur <i>rounded</i> , very short M; peduncle 2-6 in.	3. <i>U. minor</i> L. <i>Lesser Bladderwort.</i> Pools: June-Aug. P.

PRIMULACEÆ. Varieties of Primula are cultivated as ornamental plants, e.g. Polyanthus.

Corolla absent GM; calyx pinkish-white; flowers sessile, solitary, axillary.



I. *Glaux* L. *Glaux*.—(Fig. GM, above.)

Leaves opposite, entire, sessile, slightly fleshy; plant glabrous, somewhat glaucous; 2-8 in.
[Black Saltwort.]

II. *Trientalis* L. *Trientalis*.—(Fig. TR, above.)

Leaves entire, sessile, upper ones acute; peduncle slender, 1-3 flowered; corolla white or pinkish; 4-8 in.

I. *Glaux* L., p. 113.
Glaux.

II. *Trientalis* L., p. 113.
Trientalis.

III. *Primula* L., p. 114.
Primula.

IV. *Cyclamen* L., p. 114.
Cyclamen.

V. *Hottonia* L., p. 114.
Hottonia.

VI. *Lysimachia* L., p. 114.
Lysimachia.

VII. *Anagallis* L., p. 115.
Anagallis.

VIII. *Samolus* L., p. 115.
Samolus.

IX. *Centunculus* L., p. 115.
Centunculus.

1. *G. maritima* L.
Sea Milkwort.

Salt marshes: June-July. P.

1. *T. europæa* L.
Trientalis R.


Damp woods: June-July. P.

3 Var. *neglecta* Lehm.: plant slender; margin of lower lip of corolla spreading; R

III. *Primula* L. *Primula*.—

Flowers yellow; leaves wrinkled.

Calyx inflated, very open, teeth broad
O; not in contact with fruit;corolla deep yellow, spotted orange;
flowers umbellate, drooping; 4-12 in.Calyx not inflated,
teeth very narrow G;
corolla pale yellow.Leaves abruptly narrowed at base E;
on a long peduncle; 4-12 in.Leaves gradually narrowed at base PG;
peduncle of umbel very short, usual-
ly radical; 4-12 in.Flowers not yellow,
umbellate; leaves
mealy below.Corolla lobes not contiguous, about as long as tube, pale lilac with yellow centre;
calyx-teeth narrow; 2-9 in.Corolla lobes contiguous, about 1½ as long as tube, violet purple with yellow centre;
calyx-teeth broad; 1-4 in.

1. *P. officinalis* Jacq. 
Cowslip.
Meadows and shady pastures:
Apr.-May. P.
2. *P. elatior* Jacq.
Oxlip. LOC.
Shady meadows: Apr.-May. P.
3. *P. vulgaris* Huds.
Primrose. C.
Banks; thickets: Mar.-May. P.
4. *P. farinosa* L.
Bird's-eye Primrose.
Mountain pastures: May-July.
P.
5. *P. scotica* Hook.
Dry heaths: June-Aug. P.

IV. *Cyclamen* L. *Cyclamen*.—

Rootstock tuberous; flowers large, pink or white, solitary; fruiting peduncle burying its capsule in soil;
4-8 in. [*Sow-bread*.]

*1. *C. hederifolium* Ait.
Cyclamen. R. P.
Woods: Aug.-Sept.

V. *Hottonia* L. *Hottonia*.—(Fig. H, p. 113.)


Flowers in successive whorls, pale pink or purplish; sepals very narrow; corolla larger than calyx; flowering-
stem solitary, erect; 1-2 ft. [*Featherfoil*.]

VI. *Lysimachia* L. *Lysimachia*.—

Leaves rounded N; sepals cordate LN;



stem and peduncles 4-angled; plant
prostrate, creeping; 4-24 in.
[Creeping Jenny.]

1. *L. nummularia* L. 
Moneywort.
Damp shady places: June-
Aug. P.

2. *L. vulgaris* L.
Yellow Loosestrife.
River-banks: July-Aug. P.
- *3. *L. punctata* L. R.
Waste places: June-July. P.
- *4. *L. ciliata* L. R.
Waste places: June-July. P.
5. *L. nemorum* L.
Wood Lysimachia.
Damp woods: June-Aug. P.
6. *L. thyrsiflora* L. R.
Tufted Lysimachia.
Sides of ponds and ditches;
marshes: June-July. P.
- Flowers in *panicles*, terminal and axillary; sepals ciliate, margin reddish; stem and leaves hairy; 2-3 ft.
- Leaves *ovate* NM.
Stem *erect*.
- Flowers usually *solitary*, axillary.
{ Sepals narrow; petals ciliate with glandular hairs; leaves dotted; 1-1 1/2 ft.
Corolla spreading, pale; leaf-stalks ciliate; 1-3 ft.
- Stem *procumbent*; flowers solitary, axillary; sepals not ciliate; 4-16 in.
[Yellow Pimpernel.]
- Leaves *lanceolate* T; stem erect; flowers in dense racemes, axillary; sepals not ciliate; 1-3 ft.

VII. *Anagallis* L. *Pimpernel*.—

Leaves *ovate*, *sessile* A;



sepals with membranous margin; corolla spreading, usually scarlet, sometimes pink or white; 4-12 in.
[Shepherd's or Poor Man's Weather-glass.]

Leaves *rounded*, *shortly stalked* T;



sepals with non-membranous margin; corolla not spreading, veined rose; 2-10 in.

VIII. *Samolus* L. *Samole*.—(Fig. SV, p. 113.)

Leaves entire, glabrous; ovary and calyx united; calyx crowning fruit; corolla crowned with 5 scales, white; 4-20 in.

IX. *Centunculus* L. *Centunde*.—(Fig. CM, p. 113.)

Leaves entire, alternate; stems very slender; flowers very small, usually 4-partite; corolla nearly globose; 1-3 in.

1. *C. minimus* L.
Chaffweed. Loc.
[Bastard Pimpernel.]
Moist shady, sandy places: June-Aug. A.





1. *S. Valerandi* L.
Brookweed.
Marshes usually near sea: June-Sept. P.

2. *A. tenella* L.
Bog Pimpernel.
Mossy banks; bogs: June-Aug. P.

1. *A. arvensis* L.
Scarlet Pimpernel. C.
Corn-fields; dunes: June-Oct. A.

1. Plants having characters intermediate between those of *P. officinalis* and *P. vulgaris* are often found; they are hybrids between the two species.
2. Var. *cerulea* Scarb.; flowers blue, peduncles about equalling leaves; R.

OLEACEÆ. This N.O. owes its name to one of its members, i.e. the Olive (*Olea*). Forsythia and Jessamine are other species belonging to this order.

- Tree; leaves pinnate, petiolate F; fruit flattened, winged FE.
- 
- 
- I. *Fraxinus* L., p. 116.
Ash.
- Shrub; leaves simple V, S. } Leaves almost without petiole, narrowed at base V; fruit fleshy, black.
Leaves petiolate, broader at base S; fruit dry, 2-valved.
- 
- 
- II. *Ligustrum* L., p. 116.
Privet.
- III. *Syringa* L., p. 116.
Lilac.

I. *Fraxinus* L. Ash.—(Figs. F, FE, above.)

Buds black in spring; flowers greenish or brownish, developing before the leaves; racemes short, axillary; calyx and corolla absent; stamens 2; fruits pendulous; 50-80 ft.

II. *Ligustrum* L. *Privet*.—(Fig. V, above.)

Flowers white in panicles; sepals 4, joined; corolla-tube much longer than calyx; bark of branches grey; 4-10 ft.

III. *Syringa* L. *Lilac*.—(Fig. S, above.)

Flowers lilac or white; sepals 4, joined; corolla-tube much longer than calyx; 10-18 ft.

APOCYNACEÆ. The Oleander and other ornamental plants belong to this natural order.

I. *Vinca* L. *Periwinkle*.—

Leaves glabrous; sepals glabrous, much shorter than corolla-tube M, MI;

Leaves ciliate; sepals ciliate, more than half as long as corolla-tube MA;



leaves narrow at base; peduncle usually longer than neighbouring leaf; flowers usually purplish-blue, seldom white; 8-36 in.

leaves somewhat cordate at base; peduncle usually shorter than neighbouring leaf; flowers purplish-blue; 16-48 in.

1. *V. minor* L. ✕
Lesser Periwinkle.

Thickets; hedges; Mar.-June. P.

*2. *V. major* L. ✕
Greater Periwinkle.

Thickets; hedges; cultivated; Mar.-June. P.

1. *S. vulgaris* L.
Lilac.

Cultivated; Apr.-May. P.

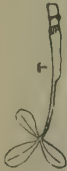
1. *L. vulgare* L. ✕
Common Privet.

Woods; thickets; June-July. P.

1. *F. excelsior* L. ✕
Common Ash. C. P.

Woods; hedges; Apr. P.

GENTIANACEÆ. The members of this N. O. contain, principally in their roots, a yellow, very bitter substance (*Gentianine*) which gives to some of them their peculiar medicinal properties.



Leaves ternate T;

Leaves floating on surface of water, rounded, heart-shaped at base L;



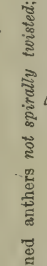
corolla white or pinkish, densely bearded on upper surface.

corolla yellow, hairy at base of upper surface.



Sepals, petals and stamens 8; flowers yellow; cauline leaves connate P.

Flowers usually 4-partite, pink, yellow or yellowish, plant $\frac{1}{2}$ -4 in.; stems slender C.



Corolla tube wide at mouth; ripened anthers not spirally twisted; flowers blue, lilac or purplish.



Corolla tube narrow at mouth E; ripened anthers spirally twisted; flowers rose, rarely white.

I. *Menyanthes* L. *Buckbean*.—(Fig. T, above.)

Bog plant; petiole long with membranous sheath at base; peduncle long; raceme many-flowered; flowers $\frac{1}{2}$ – $\frac{2}{3}$ in., 5-partite; 6-12 in. [Bog-bean; Marsh Trefoll.]

II. *Limnanthemum* Gmel. *Limnanth*.—(Fig. L, above.)

Aquatic plant; flowers 5-partite, solitary on long peduncles, yellow; stem long, creeping, rooting.

[Fringed Water-lily.]

III. *Chlora* L. *Chlora*.—(Fig. P, above.)

Plant glaucous-green; radical leaves narrowed at base; cauline leaves opposite, broadly connate; corolla-tube short, membranous; 8-24 in.

IV. *Cicendia* Adans. *Cicendia*.—(Fig. C, above.)

Sepals separate only at apex F; flowers yellow; 1-4 in.



Sepals separate almost to their base PU;



flowers pink or pale yellow; $\frac{1}{2}$ -3 in.

I. *Menyanthes* L., p. 117.
Buckbean.

II. *Limnanthemum* Gmel., p. 117.
Limnanth.

III. *Chlora* L., p. 117.
Chlora.

IV. *Cicendia* Adans., p. 117.
Cicendia.

V. *Gentiana* L., p. 118.
Gentian.

VI. *Erythraea* Neck., p. 118.
Centaur.

1. *M. trifoliata* L. H

Buckbean. Bogs; marshes: May-July. P.

1. *L. nymphaeoides*

Hoffm. and Lhk

Common Limnanth.

Ponds and still waters: July-Sept. P.

1. *C. perfoliata* L. H

Yellow-wort. Loc. Chalky pastures and shady places: June-Sept. A.

1. *C. filiformis* Delarb.

Slender Cicendia. Loc. Damp sandy, shady places: June-Oct. A.

2. *C. pusilla* Griseb.

Dwarf Cicendia. R.

Near pools in shady, sandy places: June-Oct. A.

V. *Gentiana* L. *Gentian*.—

Sepals *more or less equal*, united throughout $\frac{1}{2}$ their length; petals acute G; flowers *5-partite*, purplish.

Calyx-segments less equal; corolla tube longer than calyx G; 4-12 in.



1. *G. germanica* Willd.
R.
Chalky pastures; Aug.-Oct. A.

Throat of corolla *not bearded* G, P.

Calyx-segments more equal; corolla-tube about as long as calyx; leaves narrow; 4-12 in.

2. *G. Amarella* L.
Autumn Gentian.
Chalky pastures; Aug.-Oct. A.

Sepals *unequal*, separated almost to their base; petals obtuse P; flowers *4-partite*, bluish-purple; 2-12 in.

Stem *erect*, slender, leafy, usually branched; flowers solitary, terminal, small, blue; 1-6 in.



3. *G. campestris* L.
Field Gentian.
Hillside pastures, limestone; Aug.-Oct. A.

Small bi-fid corolla lobes *present* between larger lobes.

Throat of corolla *not bearded*.

Stem *prostrate*; leaves in terminal tufts; flowers solitary, terminal, large, blue; 1-3 in.

4. *G. nivalis* L. VR.
Small Gentian.
Mountains; July-Aug. A.

Small bi-fid corolla lobes *not present* between larger lobes; stem erect, leafy; flowers shortly stalked, in opposite pairs near apex PN; blue; 4-20 in.



5. *G. verna* L.
Spring Gentian. R.
Limestone pastures; Apr.-June, P.

6. *G. Pneumonanthe* L.
Marsh Gentian. Loc.
Marshes; Aug.-Sept. P.

VI. *Erythræa* Neck. *Centaury*.—

Leaves very narrow, *elongated*, obtuse L;



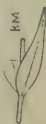
petals rounded at apex; coloured part of corolla-tube as long as colourless part; 1-8 in.

Leaves on middle of stem more or less *ovate, acute* RM.



stem branching from the base; 1-8 in.

2. *E. ramosissima* Pers.
Sandy pastures; June-Sept. A.



Flowers *sessile*; inflorescence compact EC;



stem branching in upper part; 8-24 in.

3. *E. Centaurium* Pers.
Common Centaury.
Dry woods and pastures; June-Sept. A.

Stamens inserted on base of corolla-tube; leaves ovate, blunt; flowers sessile; inflorescence compact; 4. *E. capitata* Willd.
Downs near coast; July-Aug. A.


Stamens inserted at top of corolla-tube.

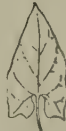
POLEMONIACEÆ. The *Phlox* and *Cobaea* belong to this natural order.**I. Polemonium** L. *Polemonium*.—


Radical leaves tufted, cauline leaves alternate, pinnate; leaflets many; flowers in corymb or panicle; corolla blue; 1-3 ft.

1. *P. cærulium* L.
Jacob's Ladder. R.
Hilly coasts: July. P.

CONVOLVULACEÆ.**I. Convolvulus** L. *Bindweed*.—

Stem more or less *twining*. Bracts *small, not in contact* with flower A;  flowers white or pink; 8-32 in.

Bracts *large, in contact* with flower S. Leaves *acute, triangular* SP; stem *sp* climbing; corolla white; 3-15 ft. 

Leaves *rounded* at apex SL; stem prostrate;  corolla pink; 4-8 in.


1. *C. arvensis* L.
Lesser Bindweed. C.
Fields; roadsides: June-Sept. P.

2. *C. sepium* L.
Larger Bindweed. C.
Hedges: June-Aug. P.

3. *C. Soldanella* L.
Sea Bindweed.
Sandy sea-shores: June-Aug. P.

CUSCUTACEÆ. The plants of this natural order are not green; they are parasitic and very harmful to their host-plants.

I. Cuscuta L. *Dodder*.—

Bract *absent* at base of flower; corolla large,  stamens enclosed by corolla. Parasitic on Flax.]

*1. *C. densiflora* Soy.-Will.

Flowers in *sessile clusters*, pinkish or yellowish.

Bract *present* at base of flower; corolla *bell-shape* M, E.

Sepals *obtus* M; stamens enclosed by corolla.

[Parasitic on Nettles, Flax, Hop.]

Sepals *acute* E; stamens projecting beyond corolla.

[Parasitic on Clover, Gorse, Thyme, Heath.]



Flax Dodder. R.
Flax-fields: July-Aug. A.

2. *C. major* C. Bau. ✠
Greater Dodder. Loc.
Waste places: June-Aug. A.

3. *C. epithymum* Murr.¹
Lesser Dodder.
Heaths: July-Aug. A.

1. Var. *Trifolii* Bab.; flower larger; on Clover chiefly.

I. Echium L. *Echium*.—(Fig. EV, p. 120.)

Stem erect, *simple*; radical leaves withering early, secondary veins *not visible*; cauline leaves long, narrow, almost sessile; corolla reddish, then blue, tube narrow; plant hispid, hairs prickly and glandular at their base; 1-2 ft.

Stem *branched* from base, spreading; radical leaves not withering early, secondary veins *clearly visible*; cauline leaves broader, semi-amplexicaul; corolla violet-purple, striated white; tube short and broad; plant hispid; 8-28 in.

II. Pneumaria Hill. *Pneumaria*.—

Stem branched, procumbent; leaves simple, entire, obtuse, fleshy, glabrous, rough; flowers in cymes, purplish-blue; plant glaucous, 1-2 ft.

III. Heliotropium L. *Heliotrope*.—(Fig. H, p. 120.)

Sepals obtuse, persistent, radiating below ripe fruit; flowers white, throat yellow; 4-20 in.

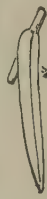
IV. Lithospermum L. *Gromwell*.—

Flowers blue; corolla much longer than calyx PC; barren stems *procumbent*,



midrib on leaf alone prominent; 1-2 ft.

Flowers *white* or whitish; corolla little longer than calyx; stems *erect*.
 { Midrib and secondary nerves of leaf prominent IO; throat of corolla with 5 *small scales*; fruits shining; 16-32 in.
 { Midrib of leaf alone prominent AV; tube of corolla with 5 *hairy lines* (LA, p. 120); fruits wrinkled; 1-2 ft.
 [Bastard Alkanet.]

**V. Pulmonaria L.** *Lungwort*.—

Leaves *lanceolate*, usually spotted; flowers first red, then blue; 4-16 in.

Leaves *ovate-lanceolate*, always spotted; flowers pale purple; 4-20 in.

VI. Symphytum L. *Comfrey*.—(Figs SO, S, p. 120.)

Upper leaves *very decurrent*; flowers yellowish, white, or purple; fruits smooth, shining; 2-3 ft.

Upper leaves *slightly decurrent*; flowers yellowish-white; fruits covered with small tubercles; underground stem a woody, brown tuber; 1-2 ft.

1. E. vulgare L.

Viper's Bugloss.

Roadsides; waste places; June-Aug. B.

2. E. plantaginum L.

Purple Bugloss.

Waste places near sea; June-Aug. B.

1. P. maritima Hill.

Sea Lungwort. R.

Shingle; May-Aug. P.

1. H. europæum L.

Heliotrope.

Gardens; July-Sept. A.

1. L. purpureo-cæruleum L.

Creeping Gromwell. R.

Thickets; May-July. P.

2. L. officinale L.

Common Gromwell.

Thickets; May-July. P.

3. L. arvense L.

Corn Gromwell.

Fields; waste places; May-July. A.

1. P. angustifolia L.

Narrow-leaved Lungwort. R.

Thickets; Apr.-May. P.

***2. P. officinalis L.**

Lungwort. R.

Gardens; thickets; Apr.-May. P.

1. S. officinale L.

Common Comfrey. R.

Wetshady places; May-July. P.

2. S. tuberosum L.

Tuberous Comfrey. R.

Damp shady places; May-July. P.

VII. *Asperugo* L. *Asperugo*.—(Fig. A, p. 120.)

Leaves narrowed at base; calyx much enlarged after flowering, compressed; flowers 1-4, axillary; pedicels of fruits recurved; corolla blue; 8-18 in.

1. *A. procumbens* L.
Madwort. R.
Fields; roadsides: June-July. P.

VIII. *Borago* L. *Borago*.—(Fig. B, p. 120.)

Plant hispid; lower leaves with long petioles; corolla-lobes spreading; flowers drooping, bright blue, seldom pink or white; 1-2 ft.

*1. *B. officinalis* L. ✕
Common Borage.
Waste and cultivated ground:
June-Aug. A.

IX. *Lycopsis* L. *Bugloss*.—(Fig. AR, p. 120.)

Plant very hispid; leaves lanceolate, wavy, lower ones stalked, upper ones semi-amplexicaul; flowers blue, small; 8-20 in.

1. *L. arvensis* L.
Small Bugloss.
Cultivated ground; hedges:
June-Aug. A.

X. *Echinospermum* Sw. *Echinospermum*.—(Figs. EL, E, p. 120.)

Leaves narrow, bristly; prickles of fruit hooked; flowers blue; 8-20 in.

*1. *E. Lappula* Lehm. R.
Waste places: June-Aug. A.
or B.

XI. *Anchusa* L. *Alkanet*.—

Lower leaves stalked, ovate S, cottony below, persistent;



flowers blue; 1-2 ft.

Lower leaves narrow at base, lanceolate, hispid; flowers purple or bluish-violet; 1-2 ft.

XII. *Cynoglossum* L. *Hound's Tongue*.—(Fig. C, p. 120.)



Calyx very hairy OF;

leaves hairy, hoary on both surfaces; flowers purplish-red in spreading racemes; pedicel of fruit not recurved, shorter than calyx; plant fetid; 8-32 in.

1. *C. officinale* L. ✕
Common Hound's Tongue.
Waste places: June-July. B.



Calyx slightly hairy M;

leaves green, shining above; flowers violet-blue; pedicel of fruit longer than calyx; 1-3 ft.

2. *C. montanum* Link
Green-leaved Hound's Tongue. R.
Woods: June-July. B.

XIII. *Omphalodes* Moench. *Omphalodes*.—

Radical leaves with long petioles, blade ovate or heart-shaped; flowers usually bright blue, large; calyx closely covered with hairs; plant almost glabrous; 2-6 in.

*1. *O. verna* Moench. VR.
Plantations: Apr.-May. P.

XIV. *Myosotis* L. *Myosote*. [Scorpion-grass].—

Hairs on calyx
straight, adpressed.

✓d pæ



Calyx of fruit
spreading;
fruit black,
shining.

Raceme slightly
leafy below; calyx-
teeth narrow, half
length of calyx;
plant hairy.

Raceme
1-2 ft.

Corolla leafless; calyx-teeth short, broad; plant almost glabrous;

Stem slightly angular, hairs spreading; corolla-limb flat, longer than tube, pale blue.

[Forget-me-not.]

Stem rounded, hairs adpressed; corolla-limb slightly concave, equalling tube, bright blue; 4-18 in.

[Forget-me-not.]

Pedicels of fruits more or less adpressed S; hairs on leaves often hooked;



fruiting pedicel shorter than calyx S; corolla blue; 4-8 in.

Pedicels of fruits more or less spreading V, I; hairs on leaves not hooked.

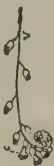
Hairs on
calyx hooked,
usually
spreading
MI.

[Use a lens.]



Pedicels not
longer than
fruiting
calyx.

Corolla yellow, then whitish, changing to reddish and later to blue, tube longer than calyx (c, Fig. V); 2-16 in.



Corolla blue, tube shorter than calyx; 1-8 in.

Calyx of fruit closed.

Lower pedicels longer than fruiting calyx I; corolla-tube not longer than calyx (c, Fig. I).



Corolla tube shorter than calyx; lower leaves gradually narrowed IT; 8-24 in.



Corolla tube as long as calyx; lower leaves sharply narrowed SI; 8-24 in.



Calyx of fruit open; flowers large; 4-10 in.

1. *M. palustris* With.
Forget-me-not. C.

Watery places: June-Aug. P.

2. *M. repens* Don
Boggy places: June-Aug. P.

3. *M. cæspitosa*
Schultz. C.

Watery places: June-Aug. P.

4. *M. stricta* Link
Old walls: Apr.-June. A.

5. *M. versicolor* Pers.
Changing Myosote. C.
Fields; roadsides: Apr.-June. A.

6. *M. collina* Hoffm.
Early Myosote.

Dry places: Apr.-May. A.

7. *M. arvensis* Hill.
Field Myosote. C.
Banks; shady places: May-Sept. A. or B.

8. *M. sylvatica* Hoffm.
Wood Myosote. R.
Woods; streams: May-June. P.

9. *M. alpestris* Schm.
Mountain Myosote. VR.
Mountains: July-Aug. P.

SOLANACEÆ.

Many of the species are poisonous on account of the organic alkalies that they contain (*solanine*, *atropine*, *hyoscyamine*, etc.); in minute quantities, several of these alkalies are used in medicine.

Shrub; spinous; flowers purple or lilac; corolla funnel-shaped, slightly irregular L.



I. **Lycium** L., p. 124.
Lycium.

Calyx *enlarging considerably* after flowering P, and enclosing the fruit; corolla cup-shaped A, whitish with greenish throat; anthers not converging.



II. **Physalis** L., p. 125,
Physalis.

Corolla *cup-shaped*
or *spreading* A, N.

Calyx *not enlarging* after flowering; corolla spreading, white or purple; anthers converging.



III. **Solanum** L., p. 125.
Solanum.

Plant
usually
herbaceous.

Flowers *yellowish*, veined
purple or brown, uni-
lateral HN;



leaves lobed; lobes acute; fruit
rounded, opening above by a
lid HY.



IV. **Hyoscyamus** L., p.
125.
Henbane.

Corolla
tubular
HN, B, D.

Leaves *entire* B; fruit *fleshy*, globular B,
black when ripe.



V. **Atropa** L., p. 125.
Atropa.

Flowers
purple or
white.¹

Leaves *sharply toothed* D; corolla
with longitudinal folds; fruit *dry*,
opening by 4 valves DS.



VI. **Datura** L., p. 125.
Datura.

I. **Lycium** L. *Lycium*.—(Fig. L, above.)

Leaves glabrous, lanceolate, pointed; calyx membranous; fruit fleshy, red or reddish-yellow; shrub straggling; 3-15 ft.

* I. L. **barbarum** L.
[Tea-plant.]
Hedges: June-Aug. P.

II. *Physalis* L. *Physalis*.—(Figs. A, P, p. 124.)

Leaves oval; flowers solitary; fruit fleshy, red, surrounded by red, enlarged calyx; 1-2 ft.

III. *Solanum* L. *Solanum*.—The Tomato belongs to this genus.

Leaves *deeply divided* with *more than 3 lobes*; flowers white or purple; fruit yellowish; underground stems tuberous at apex; 1-2 ft.



Flowers *purple*; leaves slightly cordate at base, upper ones often 3-lobed
DU; fruit *red*, oval; stem climbing, shrubby at base; 3-6 ft.
[Nightshade.]

Leaves *entire*,
toothed,
or *3-lobed*.



Flowers *white*; leaves entire or toothed; fruit *black*, globular; stem herbaceous; 2-24 in.
[Black Nightshade.]

IV. *Hyoscyamus* L. *Henbane*.—(Figs. HN, HY, p. 124.)

Leaves sometimes deeply lobed; ripe fruit surrounded by enlarged persistent calyx; plant hairy, viscid; 8-32 ft.

V. *Atropa* L. *Atropa*.—(Fig. B, p. 124.)

Leaves oval, pointed; flowers purplish-brown, solitary; fruit black, shining; 2-5 ft. [Dwale; Deadly Nightshade.]

VI. *Datura* L. *Datura*.—(Fig. D, DS, p. 124.)

Leaves glabrous or nearly so; calyx tube long; fruit prickly; 1-2½ ft.

1. **P. Alkekengi** L. H
Winter Cherry.
(cultivated: June-Sept. P.

1. **S. tuberosum** L. H
Potato.
(cultivated: June-Sept.

2. **S. Dulcamara** L. H
Bittersweet.
Hedges; thickets: June-Aug. P.

3. **S. nigrum** L. H
Black Solanum.
Waste and cultivated ground:
June-Oct. A.

1. **H. niger** L. H
Common Henbane.
Waste places: May-July.
A or B.

1. **A. Belladonna** L. H
Belladonna. R.
Waste places: June-Aug. P.

*1. **D. Stramonium** L. H
Thorn Apple.
Waste ground: July-Sept. A.

1. The genus *Nicotiana* L. [Tobacco]—corolla rose [*N. Tabacum* L.] H —has a non-spinous fruit, 2-valved, later 4-valved.—2. Var. *littorale* Raab.: leaves very hairy; R.—3. Var. *minutidum* Bernh.: ripe fruit red, leaves with musk-like odour; R; var. *ochroleucum* East.: fruit yellow, stem angular; R.—4. Var. *Tatula* L.: flowers bluish-purple, stem and leaves purplish; R.

SCROPHULARIACEÆ. The plants belonging to this N.O. show considerable variety of form, particularly in the corolla. In the genera *Bartsia*, *Pedicularis*, *Rhinanthus*, *Euphrasia*, *Odontites*, *Melampyrum*, the various species are semi-parasitic on the roots or underground stems of the neighbouring plants, particularly Grasses; they are, therefore, harmful to crops.

Stamens 5; corolla 5-lobed, spreading, slightly tubular, usually yellow; flowers in long raceme or spike.

Corolla-tube with protuberance at base M, OR.

Corolla-tube distinctly spurred at base SU, ST.

Leaves all radical L, entire, petioles long;

Stamens 4; opposite.

Corolla without spur or protuberance.

Stamens 4; didynamous.



usually a 5th stamen is reduced to a scale (e, Fig. S); leaves deeply divided, lobes parallel P;

Leaves alternate.

Flowers large in long racemes D; leaves acute; corolla distinctly irregular.

Flowers small; leaves obtuse; corolla not distinctly irregular.



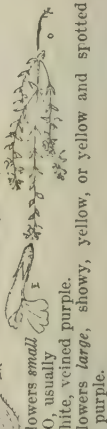
Calyx inflated; 4-toothed; upper lip of corolla 2-lobed.

Leaves opposite.

Leaves entire or toothed.

Stamens 4; fifth stamen not represented by a small scale.

anthers obtuse, hairy.

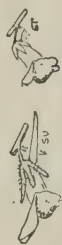


Upper lip compressed V; seeds 2-4.

Upper lip not compressed R.

Seeds several.

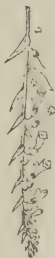
Seeds numerous.



plant aquatic; flowers whitish or rose.



corolla 2-lipped.



Flowers solitary, axillary, tube short, lobes spreading.

Flowers in short raceme, tube long.

I. *Verbascum* L., p. 127. *Mullen.*

II. *Antirrhinum* L., p. 127. *Snapdragon.*

III. *Linaria* Hill, p. 128. *Linaria.*

VII. *Limosella* L., p. 129. *Limosel.*

IV. *Scrophularia* L., p. 128. *Scrophularia.*

VIII. *Pedicularis* L., p. 129. *Pedicularis.*

IX. *Digitalis* L., p. 129. *Forget-me-not.*

X. *Sibthorpia* L., p. 129. *Sibthorpia.*

VI. *Erinus* L., p. 129. *Erinus.*

XI. *Rhinanthus* L., p. 129. *Meadow Rat.*

XII. *Euphrasia* L., p. 129. *Euphrasia.*

V. *Mimulus* L., p. 129. *Eyebright.*

XIV. *Melampyrum* L., p. 131. *Mimulus.*

XV. *Odontites* Hall, p. 132. *Cow-wheat.*

XVI. *Bartsia* L., p. 132. *Odontites.*

Bartsia.

XIII. *Veronica* L., p. 130. *Speedwell*.

Stamens 2; corolla 4-lobed, spreading, tube very short, usually blue.

I. *Verbascum* L. *Mullein*.—The plants comprising this genus are difficult to determine, many of them being hybrids and therefore presenting intermediate characters.

Corolla yellow or yellowish, throat spotted purple; hairs on filaments purple.

Leaves slightly hairy or glabrous above, slightly woolly below, lower ones with long petiole NI; pedicel of fruit about twice as long as calyx; $1\frac{1}{2}$ -3 $\frac{1}{2}$ ft.



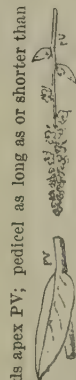
Leaves glabrous or almost so, shining, lower ones almost sessile BL; bracts and sepals with glandular hairs.

Pedicels solitary, 2-4 times longer than calyx; $1\frac{1}{2}$ -3 $\frac{1}{2}$ ft.



Pedicels 1-5, shorter than calyx; glandular hairs more numerous; 1-3 $\frac{1}{2}$ ft.

Stem round even towards apex PV; pedicel as long as or shorter than calyx PV; leaves covered above and below with a mealy down, falling in flakes; $2\frac{1}{2}$ -4 $\frac{1}{2}$ ft.



Leaves not decurrent; filaments all hairy.

Corolla yellow, sometimes white; hairs on filaments white or yellowish, sometimes absent.

Stem angular in upper part LC; pedicel of fruit longer than calyx LY;



leaves nearly glabrous above, down white and powdery below; 2-3 $\frac{1}{2}$ ft.

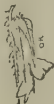
Leaves decurrent, very woolly on both sides; the two longer filaments more or less glabrous; stigma globular I; corolla somewhat cup-shaped; 2-5 ft.



[Aaron's rod; High-taper.]

II. *Antirrhinum* L. *Snapdragon*.—

Sepals narrow, longer than corolla OR;



corolla rose, seldom white; 4-20 in.

Sepals broad, shorter than corolla M;



flowers purplish-red, or white with yellow throat; 16-32 in.

1. *V. nigrum* L.

Dark Mullein.

Shady banks and roadsides; June-Oct. B.

2. *V. Blatteria* L.

Moth Mullein. R.

Banks; roadsides; June-Sept. B.

3. *V. virgatum* With.

Twiggy Mullein. R.

Banks; roadsides; June-Sept. B.

4. *V. pulverulentum*

Vill.

Hoary Mullein. Loc.

Roadsides; July-Aug. B.

5. *V. Lychnitis* L.

White Mullein. R.

Waste places; June-Aug. B.

6. *V. Thapsus* L. ✕

Great Mullein. C.

Roadsides; waste places; July-Sept. B.

1. *A. Orlanthum* L.

Lesser Snapdragon.

Cultivated ground; July-Sept. A.

***2. *A. majus* L. ✕**

Great Snapdragon.

Old walls; June-Sept. P.

III. *Linaria Hill. Linaria.*—

Petiole short S, EL; calyx hairy; corolla yellow, upper lip purple.

Leaves *ovate-rounded* S;

Leaves *hastate* EL;

Petiole long C; leaf rounded, slightly 5-lobed C; calyx glabrous; corolla pale [Mother-of-thousands.]



Flowers solitary, axillary MI; pedicel 3-4 times longer than calyx MI;



Calyx glabrous V; corolla sulphur yellow, throat orange;

Calyx hairy, glandular SV; corolla pale yellow;



racemes short SP; 4-12 in.



Fruit shorter than calyx; corolla purple, striated, paler or darker purple, spur long; seed fringed; 8-16 in.

Fruit Spur short ST; corolla whitish, veined purple or blue; 8-24 in.

Spur long; corolla purple, lower part sometimes yellow; 1-3 ft.

Spur long; corolla purple, lower part sometimes yellow; 1-3 ft.

IV. *Scrophularia L. Scrophularia.*—

Scale or barren stamens present.

Leaves downy, cordate-triangular; stem hairy, winged V; leaves cordate at base V; pedicel 4-angled; leaves acute N, 16-40 in.

Leaves glabrous; flowers reddish-brown.

Stem with sharp edges, or 4-winged; not tuberous.

Leaves obtuse, teeth rounded A; 2-4 ft. Leaves more pointed, teeth acute, petiole winged and not clearly defined; 2-5 ft.

1. *L. spuria* Mill.

Round-leaved Linaria.

Corn-fields; July-Oct. A.

2. *L. Elatine* Desf. ✠

Pointed Linaria.

Corn-fields; July-Oct. A.

*3. *L. Cymbalaria* Mill.

Ivy-leaved Toadflax.

Old walls; May-Sept. P.

4. *L. minor* Desf.

Lesser Linaria.

Fields; June-Oct. A.

5. *L. vulgaris* Mill.¹

Yellow Toadflax. C.

Hedges; waste places; July-Sept. P.

*6. *L. supina* Desf. R.

Waste places near sea; July-Sept. A.

7. *L. Pelisseriana* Mill. VR.

Rocks; waste places; June-Sept. A.

8. *L. repens* Mill.

Pale Linaria. R.

Waste places; July-Sept. P.

*9. *L. purpurea* Mill.

Purple Linaria.

Old walls; July-Aug. P.

*1. *S. vernalis* L.

Yellow Scrophularia. R.

Damp waste places; Apr.-June. P.

2. *S. Scorodonia* L.

Balm-leaved Scrophularia. R.

Damp waste places; June-Aug. P.

3. *S. nodosa* L. ✠

Figwort. C.

Moist shady places; June-Sept. P.

4. *S. aquatica* L.

Water Scrophularia. C.

Wet places; July-Sept. P.

Wet places; July-Sept. P.

V. Mimulus L. *Mimulus*.—

Plant slightly downy or glabrous, *odorless*; flowers more than 1 in. in length, yellow, usually spotted purple; 1-2 ft.

Plant hairy, glandular, fragrant; flowers smaller, yellow; 6-18 in.

[Musk.]

VI. Erinus L. *Erinus*.—

Leaves more or less hairy, toothed towards apex, lower ones in a rosette; calyx and corolla bearing short hairs; 2-6 in.

VII. Limosella L. *Limosella*.—(Fig. L, p. 126.)

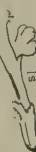
Underground stem slender, rooting, producing here and there tufts of radical leaves; flowers small, solitary; 1-4 in.

VIII. Pedicularis L. *Pedicularis*.—

Upper lip of corolla bearing a tooth towards the middle of each lateral margin PA; calyx 2-lobed, hairy; fruit longer than calyx; stem and branches erect; 4-24 in.



Upper lip of corolla with lateral margin entire SI; calyx unequally 4 or 5 toothed, ciliate; fruit shorter than calyx; main stem erect, branches prostrate, spreading; 4-8 in.

**IX. Digitalis L. *Foxglove*.—**

Flowers purple, rose or white, spotted; calyx hairy P;



leaves hairy below; 2-4 ft.



Flowers yellow or whitish-yellow; stem, calyx and pedicel hairy, glandular; veins of leaves very hairy below; 1-2½ ft.

X. Sibthorpia L. *Sibthorpia*.—

Stem slender, creeping; leaves alternate, roundish, 5-7 toothed or lobed, petioles long; flowers small; upper 1. S. europæa L. Common *Sibthorpia*. Damp shady places: June-Aug. P.

XI. Rhinanthus L. *Meadow Rattle*.—

Corolla yellow; Calyx teeth close together in pairs MI; upper bracts green; 8-18 in.



seeds winged. Calyx teeth not close together in pairs MA; upper bracts membranous; 8-18 in.

**XII. Euphrasia L. *Eyebright*.—(Figs. E, O, p. 126.)**

Upper leaves alternate or opposite; anther-lobes unequally pointed, bearded at base; calyx hairy, glandular; colour of corolla various; 1-8 in.

***1. M. luteus Willd.**

Yellow Mimulus.

Wet shady places: June-Sept. P.

***2. M. moschatus Dougl.**

Musk Mimulus.

Wet shady places: July-Aug. P.

* 1. **E. alpinus L.** LOC. Rocks and wet places: July-Aug. P.

1. L. aquatica L.

Common Limosella. R.

Muddy places: July-Sept. A.

1. P. palustris L.

Marsh Louisewort.

Marshes: May-Aug. A.

2. P. sylvatica L.

Heath Louisewort. C.

Damp heathy places: Apr.-Aug. P.

1. D. purpurea L. ✠

Purple Foxglove. C.

Hedges; woods: June-Aug. B, or P.

2. D. grandiflora All.

Gardens: June-Aug. P.

1. S. europæa L.

Common Sibthorpia.

Damp shady places: June-Aug. P.

1. R. Crista-galli L.

Common Meadow Rattle. C.

Meadows: May-Aug. A.

2. R. major Ehrh. R.

Cultivated ground: June-Aug. A.

1. E. officinalis L. ✠

Common Eyebright. C.

Heaths; pastures: June-Sept. A.

1. Hybrid between this plant and *L. repens* are sometimes found.—2. This plant varies considerably in size and form, also in the colour of the corolla.

XIII. *Veronica L. Speedwell.*—

Leaves on middle part of stem
6-7 lobed V;



fruit deeply notched, shorter than calyx; corolla pale blue; 2-5 in.



Raceme long, pointed S; flowers many, bright blue; leaves ovate-lanceolate; 4-16 in.

Raceme
dense,
terminal.

Raceme short, not
pointed;
flowers few.

Stem shrubby at base; flowers large, bright blue; 2-8 in.

Stem herbaceous at base; flowers small, blue; 2-6 in.

Leaves more
lax A, O.
Raceme
lax A, O.

Branches erect or
spreading; leaves
ovate A; fruit
shorter than calyx;

flowers light blue;
raceme terminal;
2-12 in.

Branches creeping O, rooting; leaves longer O; fruit longer
than calyx; flowers pale blue; raceme axillary; 4-16 in.



Leaves glabrous,
shining, oval
SE;

style as long as fruit; flowers pale
blue or whitish, veined; raceme ter-
minal; 4-8 in.

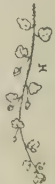
VC.

Pastures; hedges; May-July. P.

Leaves 3-7 lobed TR;

Leaves covered with hairs.

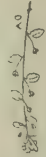
Sepals cordate at base; fruit glabrous, inflated; leaves
slightly lobed, middle lobe large H; flowers pale
blue; 4-12 in.



Leaves
toothed
or only
slightly
lobed.

Sepals
not
cordate;
fruit
more or
less
hairy.

Pedicels as long as
or slightly longer
than leaves AG;
lobes of fruit in-
flated, not diver-
ging.



Sepals oblong, obtuse;
flowers blue, lower
petals white or pink;
4-8 in.

Sepals ovate, acute; flowers larger, bright blue;
4-8 in.



Pedicels much longer than leaves PE;
lobes of fruit flat, divergent; 4-12 in.

11. *V. didyma* Ten.

Waste places; fields; Apr.-Sept. A.

*12. *V. Buxbaumii* Ten.
Buxbaum's Speedwell.
Fields; Apr.-Oct. A.

1. *V. verna* L.
Vernal Speedwell. VR.
Sandy heaths; Apr.-May. A.

2. *V. spicata* L. H
Spiked Speedwell. R.
Hilly, sandy or chalky places;
July-Sept. P.

3. *V. saxatilis* L.
Rock Speedwell. VR.
Rocks; July-Aug. P.

4. *V. alpina* L.
Alpine Speedwell. R.
Mountains; July-Aug. P.

5. *V. arvensis* L.
Wall Speedwell. C.
Walls; dry places; Apr.-Oct. A.

6. *V. officinalis* L. H
Common Speedwell. C.
Dry shady places; June-Aug. P.

7. *V. serpyllifolia* L.
Thyme-leaved Speedwell.
VC.

8. *V. triphyllus* L.
Fingered Speedwell. R.
Fields; heaths; Apr.-May. A.

9. *V. hederæfolia* L.
Ivy-leaved Speedwell.
(cultivated and waste places;
May-July. A.)

10. *V. agrestis* L.
Procumbent Speedwell. C.
Waste places; fields; Apr.-Sept. A.

11. *V. didyma* Ten.
Waste places; fields; Apr.-Sept. A.

*12. *V. Buxbaumii* Ten.
Buxbaum's Speedwell.
Fields; Apr.-Oct. A.

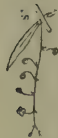
Calyx longer than pedicels of fruits A, O.

Leaves alternate, at least upper ones.

Pedicels of fruits.

Calyx shorter than

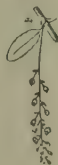
Leaves narrow, elongated SC, SCU;



pedicels spreading or reflexed; flowers white or pinkish; 6-16 in.

13. *V. scutellata* L.
Marsh Speedwell.
Marshes: June-Aug. P.

Leaves petiolate B;



stem rounded; flowers light blue; 8-24 in.

Leaves glabrous.

14. *V. Beccabunga* L. ✠
Brooklime. C.
Watery places: May-Sept. P.

Leaves sessile AN;



stem almost 4-angled; flowers pale blue; 8-30 in.

15. *V. Anagallis* L.
Water Speedwell.
Watery places: July-Aug. P.

Leaves all petiolate M; fruit flat, toothed, ciliate; flowers pale blue, veined; 4-16 in.



Leaves sessile C, slightly cordate at base, sharply toothed; racemes all axillary C; flowers blue; 4-20 in.

17. *V. Chamædrys* L. ✠
Germander Speedwell. C.
Hedges; woods: May-July. P.XIV. *Melampyrum* L. *Cow-wheat.*—

Flowers axillary in pairs, all turned one way PR.

Upper bracts deeply toothed at base, lower bracts similar to leaves PR; corolla yellow or yellowish; 8-20 in.



All bracts entire or almost so; corolla deep yellow; flowers smaller; 4-16 in.

Flowers in short spikes.

Bracts cordate at base, very finely toothed C, green, rose at base; corolla yellow, tinged with purple; 8-16 in.



Bracts not cordate at base, deeply toothed AR, rose or purple; corolla rose, throat yellow; 8-20 in.

1. *M. pratense* L.
Common Cow-wheat.
Thickets: June-Aug. A.2. *M. sylvaticum* L.
Small-flowered Cow-wheat. R.
Thickets and woods, mountains: July-Sept. A.3. *M. cristatum* L.
Crested Cow-wheat. R.
Thickets; woods: July-Aug. A.4. *M. arvense* L. ✠
Purple Cow-wheat. R.
Corn-fields: June-Aug. A.

XV. *Odontites* Hall. *Odontites*.—

Flowers rose or red, many, in a one-sided spike; stamens and style slightly longer than corolla B; 4-16 in.

XVI. *Bartsia* L. *Bartsia*.—

Corolla purple; spike short; calyx viscid; plant hairy; 4-8 in.

Corolla yellow, lower lip slightly longer than upper; spike long; plant hairy, viscid; 4-12 in.

OROANCHACEÆ.

The plants of this N.O. contain no green colouring matter, and are parasitic on the roots or underground stems of many species of green plants. Several of them are particularly harmful to crops of Flax, Lucerne and Saintoin. Great care is necessary in the up-rooting of the parasite if its host-plant is to be determined.

Flowers with *pedicels*; nectary prominent, crescent-shaped, at base of pistil.



Flowers sessile GA, O.

I. *Lathræa* L. *Toothwort*.—

Pedicel shorter than calyx SQ; flowers all turned one way, white mixed with purple; calyx hairy; underground bearing numerous scales; 3-8 in.

II. *Orobanchæ* L. *Broomrape*.—(Figs. GA, O, above.)

Bracts 3 below each flower
P. calyx 4-5 toothed.

Stem branched R;



Stem
not branched.

corolla yellowish, lightly tinted blue;
stigma white or bluish; 4-12 in.
[Parasitic on Hemp.]



Petals acute P, blue with darker veins;
whitish; 8-16 in.
[Parasitic on Millfol.]

Petals obtuse, purplish-blue, rarely white;
stigma pale yellow or orange; 8-16 in.
[Parasitic on *Artemisia campestris*.]

1. *O. rubra* Pers.¹
Red Odontites.

Shady places: June-Sept. A.

1. *B. alpina* L.

Alpine Bartsia. R. June-
Pastures, mountains:
Aug. P.

2. *B. viscosa* L.

Viscid Bartsia.
Damp pastures near sea: June-
Sept. A.

I. *Lathræa* L., p. 132.
Toothwort.

II. *Orobanchæ* L., p. 132.
Broomrape.

1. *L. squamaria* L.
Common Toothwort.
Woods: Apr.-May. P.

1. *O. ramosa* L.
Branched Broomrape. VR.
Fields: July-Sept. A.

2. *O. cærulea* Vill.
Blue Broomrape.
Pastures: June-July. P.

3. *O. arenaria* Borkh.
Sand Broomrape. VR.
Sandy places: June-July. P.

Stamens inserted
on middle part of
corolla-tube H.

Filaments glabrous or
slightly hairy at
base ;



corolla pale yellow, veined purple,
margin wavy H; 8-24 in.
[Parasitic on Ivy.]

Filaments very hairy throughout their length; corolla yellowish, or purple
mixed with brown; 1-2 ft.

Stamens inserted near base of corolla-tube RA; filaments glabrous or with
short hairs near apex; corolla yellowish-pink; 1-2½ ft.

[Parasitic on Broom, Gorse.]



Stamens inserted
near base of co-
rolla-tube E, G;
stigma dark
purple.

Filaments slightly hairy at base E; corolla yellowish or red-
dish with darker veins; 4-10 in.

[Parasitic on Thyme.]



Filaments very hairy in lower half G; corolla
increasing in diameter from below upwards
O, pale red, sometimes tinted purple;
4-12 in.

[Parasitic on Galiums.]



Filaments very hairy; upper
lip of corolla entire P;



stigma purple; corolla yellowish; 8-16 in.
[Parasitic on Picris hieracioides.]

Stamens
inserted
on
middle of
corolla-
tube.

Filaments almost
glabrous; upper
lip of corolla
slightly notched
M, AM; stigma
rose or purple.

Corolla-tube not abruptly curved M; bracts slightly
if any longer than flowers; corolla whitish, veined
purple; 4-20 in.
[Parasitic on Clover.]



Corolla-tube abruptly curved AM; bracts much
longer than flowers; 8-20 in.

[Parasitic on Eryngium.]



4. *O. Hederæ* Duby.
Ivy Broomrape. R.
Woods: June-July. P.

5. *O. major* L.
Tall Broomrape. R.
Pastures: June-July. P.

6. *O. Rapum* Thuill.
Great Broomrape.
Heaths; thickets: May-July.
P.

7. *O. epithymum* DC.
Red Broomrape. R.
Rocky heaths: June-Aug. P.

8. *O. Galii* Duby.
Clove-Scented Broomrape.
Pastures: June-July. P.

9. *O. Picridis* Schultz.
Picris Broomrape.
Pastures: June-July. A.

10. *O. minor* Sutt.
Lesser Broomrape.
Stony ground: June-July. A.

11. *O. amethystea* Thuill.
R.
Waste places: June-July. P?

Stigma yellow.

Stigma purple or rose.

Bract 1 below each flower O; calyx deeply 2-lobed.

1, *Var. serotina* Rehb.: branches spreading, bracts shorter than flowers.

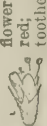
LABIATÆ.

The diverse essences contained in the plants of this N.O. have medicinal properties.—Many Labiates are cultivated in gardens for culinary or medicinal purposes, e.g. Thyme, Sage, Rosemary, Balm, Hyssop, Sweet Basil, Lavender.

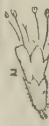
flowers white, spotted red; leaves deeply toothed LY or lobed.



Stamens 2 L;



Stamens 4 M;

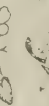


flowers pink, lilac or whitish.

upper lip very short, entire or notched.



Lower lip 3-lobed A;




upper lip apparently absent as its two lobes occur below, to the right and left of the stamens T.

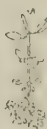


Lower lip apparently 5-lobed T;

Stamens 2, filaments 2-branched, only 1 branch bearing a perfect anther-lobes.

Calyx lips entire, upper one bearing a protuberance G;  corolla much longer than calyx.

Stems not distinctly 4-angled, procumbent or spreading; leaves entire S, small (3-7 mm. broad); flowers purple; stamens diverging (Fig. I, p. 135).



Calyx irregular, unequally 5-toothed, 3 teeth above, 2 below I.

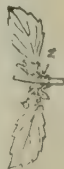
Stems distinctly 4-angled.

Flowers in a dense spike V, intermingled with bracts broader than long; stamens more or less parallel; upper lip of calyx flat I.



Flowers not in a dense spike M; stamens converging (CL).

Flowers white; leaves coarsely toothed M;



corolla-tube curved.

2-lipped.

Flowers rose, bluish or purplish; corolla-tube straight CL.



VI. *Lycopus* L., p. 136.
Lycopus.

VII. *Mentha* L., p. 137.
Mint.

XX. *Ajuga* L., p. 141.
Bugle.

XXI. *Teucrium* L., p. 141.
Germander.

X. *Salvia* L.¹, p. 138.
Sage.

IX. *Scutellaria* L., p. 138.
Skullcap.

III. *Thymus* L., p. 136.
Thyme.

VIII. *Prunella* L., p. 137.
Prunella.

IV. *Melissa* L., p. 136.
Melissa.

V. *Calamintha* Mönch, p. 136.
Calaminth.

XVII. *Marrubium* L.,
p. 140.

Horchound.

XI. *Galeopsis* L.,
p. 138.

Galeopsis.

XII. *Leonurus* L.,
p. 139.

Leonurus.

XIII. *Stachys* L., p. 139.

Woundwort.

XIV. *Betonica* L., p. 139.

Betony.

XV. *Melittis* L., p. 139.

Melittis.

I. *Hyssopus* L.,
p. 136.

Hyssopus.

II. *Origanum* L.,
p. 136.

Marjoram.

XVI. *Lamium* L.,
p. 140.

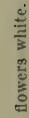
Lamium.

XVIII. *Nepeta* L., p. 140.

Nepeta.

XIX. *Ballota* L., p. 141.

Ballota.



flowers white.



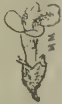
upper lip archel.



Ovary and fruits flat above
L, LE; leaves lobed LO.

Corolla not
bearing teeth
on lower lip.

Anther-lobes arranged *end to end*; stamens
reflexed outwards in older flowers.
Anther-lobes *parallel*; stamens not reflexed
outwards.



Calyx very wide MM,
membranous;



flowers large, whitish, 2-3 or
solitary, axillary ME.



Leaves *entire* or
slightly toothed;
filaments *diverg-*
ing I.



Flowers *all turned one*
way HY; leaves
narrow.



Flowers in *rounded*
clusters O; leaves
broad OR.



Ovary and fruits *flat*
above B;



calyx-teeth long LA.



Ovary
and fruits
rounded A.
G, F.

Anthers in pairs forming a cross G in
the young flowers.



Stamens *hidden* N; calyx *tubular*
N.



Stamens
protruding F;
calyx
funnel-shaped F.


Calyx more or less regular, teeth nearly equal.

Calyx toothed.

Corolla distinctly
Stamens 4, didynamous.

Calyx-teeth neither spinous nor hooked.

Calyx neither very wide, nor membranous.

1. *Rosmarinus officinalis* L.  [Rosemary] has 2 perfect stamens toothed near the base, and narrow revolute leaves.

I. *Hyssopus* L. *Hyssopus*.—(Fig. HY, p. 135.)

Leaves narrow; branches often very short, bearing smaller leaves; stem woody at base; flowers blue, rarely white; stamens protruding; 8-24 in.

II. *Origanum* L. *Marjoram*.—(Figs. O, OR, p. 135.)

Leaves petiolate; flowers purple, rarely white; bracts usually purple; plant aromatic; 1-2 ft.

III. *Thymus* L. *Thyme*.—(Fig. S, p. 134.)

Leaves small, oval or oblong; calyx 2-lipped; stamens often not well-developed. (Stems procumbent; flowering branches ascending; inflorescence usually short; 2-10 in.)

(Stems spreading, ascending, hairs often in 2 opposite lines; inflorescence longer, less dense; 2-10 in. [Wild Thyme.]

IV. *Melissa* L. *Melissa*.—(Fig. M, p. 134.)

Leaves larger than axillary inflorescences; calyx 2-lipped; corolla sometimes spotted rose; 1-3 ft.

V. *Calamintha* Moench. *Calaminth*.—

Leaves not more than $\frac{1}{2}$ in. across, toothed in upper part, shortly stalked AC;



flowers 2-4 in axillary groups AC; calyx-tube curved at base; 4-8 in. [Basil Thyme.]

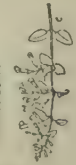
Inflorescence dense, axillary CC;



flowers surrounded by numerous bracts, pointed, bearing long cilia; leaves oval or oblong CC; 8-30 in. [Wild Basil.]

Leaves more than $\frac{1}{2}$ in. across, toothed all round.

Inflorescence not dense, axillary C;



Flowers longer than $\frac{3}{4}$ in.; calyx-teeth about $\frac{1}{4}$ length of calyx, upper ones reflexed; 1-2 ft.

Calyx-teeth bearing long cilia (O, ring of hairs within, below teeth O; 1-2 ft.



Calyx-teeth bearing short cilia (N, ring of hairs within, at base of teeth NE; 1-1 $\frac{1}{2}$ ft.



VI. *Lycopus* L. *Lycopus*.—(Fig. L, LY, p. 134.)

Leaves opposite; flowers small, axillary, dense; calyx-teeth slightly spinous; plant almost odourless; 1-3 ft.

1. *H. officinalis* L. H
Hyssop.

Cultivated; July-Aug. P

1. *O. vulgare* L. H
Wild Marjoram.

Shady places; July-Sept. P

1. *T. Serpyllum* L. H
Wild Thyme. C.

Dry pastures; heads: June-Sept. P.

2. *T. Chamædrys* Fr.
Dry pastures; heads: June-Sept. P.

*1. *M. officinalis* L. H
Common Balm.

Escape; cultivated; July-Sept. P.

1. *C. Acinos* Clairv.
Field Calaminth.

Fields; dry waste places: June-Sept. A.

2. *C. Clinopodium* Benth.
Hedge Calaminth.

Hedges; thickets; July-Sept. P.

3. *C. grandiflora* Moench
Wood Calaminth. R.

Woods; hedges; July-Sept. P.

4. *C. officinalis* Moench H
Common Calaminth.

Hedges; thickets; July-Sept. P.

5. *C. Nepeta* Clairv.
Lesser Calaminth.

Dry stony places; July-Sept. P;

1. *L. europæus* L.
Gipsywort.

Banks of streams; wet places; July-Sept. P.

VII. *Mentha* L. *Mint*. The species comprising this genus are often difficult to determine because of their numerous hybrids.

Calyx very hairy within at the base of teeth PU [in the figure, 2 teeth have been removed];



leaves small, almost sessile P; stem prostrate; 4-12 in.



1. *M. Pulegium* L. ✠
Pennyroyal.
Wet places; July-Oct. P.

Stem usually terminated by leaves longer than inflorescences S, A.



Calyx-teeth longer than broad SA; lower leaves much bigger than upper ones; 1-3 ft. [This plant is considered a hybrid between the next two.]



2. *M. sativa* L. ✠
Whorled Mint. C.
Wet places; July-Sept. P.

Calyx not hairy within SA.
AQ, R.
Stem terminated by inflorescences



Leaves all petiolate AQ.

Inflorescences dense, rounded AQ; plant glabrous or nearly so; 1-3 ft.

Calyx-teeth as broad as long AR; lower leaves slightly bigger than upper ones; 6-24 in.



3. *M. arvensis* L.
Corn Mint. C.
Damp fields; July-Sept. P.

Inflorescences not dense, elongated; plant hairy; 1-2 ft.

4. *M. aquatica* L.
Water Mint. C.
Marshes; July-Sept. P.

Leaves all sessile, or lower ones shortly petiolate; inflorescences elongated R.



*5. *M. piperita* L. ✠
Pepper Mint.
Wet places; cultivated: Aug-Sept. P.

Leaves obtuse R; bracts triangular RO; 1-2 ft.



6. *M. rotundifolia* L. ✠
Round-leaved Mint.
Wet waste places; July-Sept. P.

Leaves acute; bracts narrow; calyx-teeth narrow SI.



7. *M. sylvestris* L.
Horse Mint.
Damp shady places; July-Sept. P.

Stem glabrous; leaves glabrous, green above and below; 1-2 ft.

* 8. *M. viridis* L.
Spear Mint.
Damp waste places; Aug-Sept. P.

VIII. *Prunella* L. *Prunella*.—(Figs. I, V, p. 134.)

Filament of stamen acute V;



upper lip of calyx equally toothed (Fig. I, p. 134); flowers small, purple or whitish; 4-12 in.

Filament of stamen rounded G;



upper lip of calyx with short middle tooth; flowers large, purple, rarely white; 4-16 in.

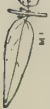
1. *P. vulgaris* L. ✠
Self-heal. VC.
Moist shady places; June-Sept. P.

2. *P. grandiflora* Jacq.
Gardens; June-Sept. P.

1. *P. vulgaris* L. ✠ [Garden Thyme] has longer leaves with revolute margins.

IX. *Scutellaria* L. *Skullcap*.—

Leaves *entire* ML, or teeth 1-2, small, at base;



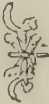
calyx shortly hairy; corolla pink, small, tube straight; 4-8 in.

Leaves *toothed* GA; calyx glabrous; corolla blue, large, tube curved; 8-16 in.



X. *Salvia* L. *Sage*.—

Corolla 3-4 times as long as calyx P; blue, seldom rose or white;



bracts hairy, glandular; upper leaves sessile; 1-2½ ft.

Corolla longer than calyx, ring of hairs within tube T; (Fig. T. Corolla laid open.)



leaves all petiolate; flowers blue; 1-2 ft.

Corolla scarcely longer than calyx, tube glabrous within; upper leaves sessile VB; flowers purplish or rose; 1-2½ ft.



[English Clary.]

XI. *Galeopsis* L. *Galeopsis*. [Hemp Nettle].—

Leaves *entire* or *slightly toothed* towards the middle L, LD; corolla rose or red, seldom white; 4-16 in.



Corolla yellow or yellowish, lower lip with tawny stripes or purple spots.

Calyx very hairy, teeth triangular D; 4-12 in.



Leaves coarsely toothed from base to apex.

Corolla rose, seldom white.

Calyx slightly hairy, teeth narrow VR; 8-24 in.



Calyx-teeth triangular IN; leaves ⅓-¼ in. broad; inflorescences distant; 4-16 in.



Calyx-teeth narrow TT; leaves 1-3¼ in. broad; inflorescences close together; 1-3 ft.



1. *S. minor* L.
Lesser Skullcap.
Moist heathy, or boggy places: July-Sept. P.
2. *S. galericulata* L. ✠
Common Skullcap.
Banks of streams: July-Sept. P.

1. *S. pratensis* L.
Meadow Sage. R.
Waste places: June-Aug. P.

- *2. *S. verticillata* L.¹
Verticillate Sage. R.
Stony waste places: June-Aug. P.

3. *S. Verbenaca* L.
Wild Sage.
Dry waste places: May-Aug. P.

1. *G. Ladanum* L.
Red Galeopsis.
Fields; stony waste places: July-Oct. A.

2. *G. dubia* Leers.
Downy Galeopsis. R.
Corn-fields: July-Sept. A.
3. *G. versicolor* Curt.
Large-flowered Galeopsis.
Corn-fields: July-Aug. A.
- *4. *G. intermedia* Vill.
Intermediate Galeopsis. R.
Fields; stony waste places: July-Sept. A.
5. *G. Tetrahit* L.
Common Hemp Nettle. C.
Woods; hedges: July-Aug. A.

XII. *Leonurus* L. *Leonurus*.—(Figs. L, LE, LC, p. 135.)
Leaves palmately 3-5 lobed; fruits hairy (Fig. LE, p. 135); corolla rose; 2-4 ft.

XIII. *Stachys* L. *Woundwort*.—

Flowers yellowish-white; leaves almost glabrous; calyx-teeth ciliate even at apex A; leaves petiolate AN; 4-12 in.

Leaves whitish, woolly or silky GE;

Flowers purple or purplish.

Leaves not whitish, woolly or silky.

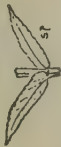
Bract of flower very small or absent.

Leaves sessile or nearly so SP, slightly cordate at base;

Leaves petiolate ST, S.

Leaves rounded at apex ST; corolla pale purple, scarcely longer than calyx; 4-20 in.

Leaves acute S; corolla dark reddish-purple, striated white, much longer than calyx; smell disagreeable; 1-3 ft.



bracts almost as long as calyx; flowers rose-purple; 1-3 ft.

leaves oval, cordate at base, crenate, hairy; corolla purple, spotted white; 1-2½ ft.

corolla purple, spotted white; 1-3 ft.



XIV. *Betonica* L. *Betony*.—

Plant hairy, green; corolla reddish-purple, rarely white, longer than calyx BE, tube without ring of hairs inside; inflorescences close together O; 8-24 in.

XV. *Melittis* L. *Melittis*.—(Figs. MM, ME, p. 135.)

Leaves petiolate, ovate, toothed, strongly fragrant when bruised; corolla sometimes spotted purple; 1-2 ft.

*1. *L. Cardiaca* L. *✠*
Motherwort R.
Hedges; roadsides: July-Sept. P.

*1. *S. annua* L.
Annual Woundwort R.
Fields: June-Sept. A.

2. *S. germanica* L.
Downy Woundwort R.
Roadsides: July-Aug. B.

3. *S. alpina* L. R.
Woods: June-Aug. P.

4. *S. palustris* L.³
Marsh Woundwort C.
Ditches; damp places: June-Sept. P.

5. *S. arvensis* L.
Field Woundwort.
Corn-fields: June-Oct. A.

6. *S. sylvatica* L.²
Hedge Woundwort. VC.
Shady places: June-Aug. P.

1. *B. officinalis* L. *✠*
Wood Betony. C.
Woods; thickets: June-Sept. P.

1. *M. Melissophyllum* L. *✠*
Bastard Balm. R.
Woods: May-June. P.

1. *S. officinalis* L. *✠* [Common or Garden Sage]: stems woody at base, flowers fragrant, purple or rarely white, cultivated.—2. *S. ambigua* Sm. is considered a hybrid between *S. palustris* and *S. sylvestris*; its characteristics are intermediate between those of the two species.

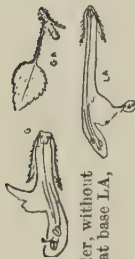
XVI. *Lamium* L. *Lamium*.—

Flowers *yellow*; anthers glabrous; leaves toothed GA, often spotted white; corolla-tube G with ring of hairs inside, at base; 1-1½ ft.

Upper leaves *sessile*,
amplexicaul AM;



corolla-tube long, slender, without ring of hairs inside, at base LA, purplish-red; 4-10 in.



1. *L. Galeobdolon* Cr. ✠
Yellow Archangel.
Woods; shady places: May-June. P.

2. *L. amplexicaule* L.
Henbit.
Waste places: Mar.-Oct. A.

Upper lip of corolla without folds; stem not bearing leaves throughout a considerable part of its length.

Leaves *crenate* PU; corolla-tube with ring of hairs within, purplish-red; 4-12 in.



Leaves *more deeply and sharply toothed* H; corolla-tube without ring of hairs, purplish-red; 4-12 in.



4. *L. hybridum* Vill.
Waste places: Apr.-June. A.

3. *L. purpureum* L.
Red Dead-nettle. C.
Waste places: Mar.-Oct. A.

Upper lip of corolla bearing 2 prominent diverging folds; stem regularly leafy.

Corolla *white*, tube curved backwards A;



flowers 10-20 in group; 8-24 in.

5. *L. album* L. ✠
White Dead-nettle. C.
Waste places: Apr.-Oct. P.

Corolla *purplish-red*, tube not recurved M;



flowers 6-10 in group; leaves more frequently spotted white; 8-24 in.

*6. *L. maculatum* L.
Spotted Dead-nettle. R.
Waste places: Apr.-Oct. P.

XVII. *Marrubium* L. *Horehound*.—(Fig. MA, p. 134.)

Stem erect, hoary; leaves crenate, very hoary below, wrinkled; plant strongly odorant; 1-2 ft.

XVIII. *Nepeta* L. *Nepeta*.—

Stem *creeping*, rooting; leaves rounded, crenate, cordate at base GH; flowers violet, blue or lilac, axillary GH; each pair of anthers forming a cross (Fig. G, p. 135); 8-20 in.



1. *N. hedoracea* Trev. ✠
Ground Ivy, VC.
Hedges; damp thickets: Apr.-June. P.

Stem *erect*; leaves acute, sharply toothed, white and downy below; flowers white, often spotted red (Fig. N, p. 135), in dense crowded whorls; anthers not forming a cross; 2-3 ft.

2. *N. Cataria* L. ✠
Catmint.
Hedges; waste places: July-Sept. P.

XIX. *Ballota* L. *Ballota*.—(Fig. F, p. 135.)

Leaves coarsely toothed, hairy; calyx funnel-shaped; corolla purple, rarely white; odour fetid; 2-3 ft.

XX. *Ajuga* L. *Bugle*.—

Flowers yellow, solitary, axillary C; leaves deeply 3-lobed C, hairy, viscus;



stems spreading; 4-8 in.

[Ground Pine.]

Stem hairy on all four sides G; branches not creeping; flowers bluish-purple in compact whorled spike; floral leaves about twice length of flowers; 4-12 in.



Flowers blue, purple or whitish, whorled; leaves not lobed.

Stem hairy on two opposite sides RE; creeping branches many, rooting; R; flowers blue, rarely white, whorls distant or close; 4-12 in.

XXI. *Teucrium* L. *Germander*.—

Leaves deeply lobed B, hairy, viscus;



flowers rose in small axillary groups; 4-12 in.



Leaves sessile SC;

flowers lilac or purplish in axillary groups of 3-2; 4-12 in.

Leaves toothed SC, S, TC.

Flowers yellowish; calyx-teeth unequal SA;

leaves cordate at base S; 6-24 in.

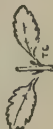


*4. *T. Chamædrys* L. *Wall Germander*. Old walls; July-Sept. P.

Leaves petiolate S, TC.

Flowers rose; calyx-teeth almost equal CH;

leaves not cordate at base TC; 4-8 in.

1. *B. nigra* L.

Black Horehound. Roadsides; waste places; June-Sept. P.

1. *A. Chamæpitys*

Schreb. *Yellow Bugle*. Loc. Dry fields; May-Aug. A.

2. *A. pyramidalis* L. Shady pastures; May-June. P.

3. *A. reptans* L.

Common Bugle. Woods; pastures; May-July. P.

1. *T. Botrys* L.

Cut-leaved Germander. R. Dry hilly places; July-Sept. A.

2. *T. Scordium* L.

Water Germander. R. Marshes; June-Sept. P.

3. *T. Scorodonia* L.

Wood Sage. C. Woods; shady dry places; July-Sept. P.

VERBENACEÆ. Many exotic species, herbaceous or shrubby, are cultivated in gardens as ornamental plants.

I. Verbena L. Vervein.—(Figs. VE, V, p. XXV.)

Leaves opposite; flowers small in long spikes; corolla rose-lilac, funnel-shaped; 1-2½ ft.

PLANTAGINACEÆ. Several species of Plantain are used in medicine.

Leaves *very narrow* and *all radical L.*, *longer* than flowering-stem L;
flowers monœcious;



plant aquatic.

Leaves *not at the same time very narrow and all radical, shorter* than flowering-stem; flowers perfect; plant not aquatic.

I. Littorella Berg. Littorel.—(Fig. L, above.)

Staminate flowers on long stalks, filaments long; pistillate flowers sessile, axillary, hidden by leaves; 2-4 in.
[Shore-weed.]



Leaves *very narrow, not all radical A*; stem branched;
branches having only their first leaves developed;

plant finely hairy, glandular; 4-16 in.

1. L. lacustris L. Littorel.
Margins of lakes and ponds,
or submerged; June-Aug. P.

1. P. arenaria W. and K. Sand Plantain. Loc.
Sandy ground; June-Aug. A.

Leaves of *equal breadth* from base to apex MR,
fleshy, usually grooved at least at the base;
wings of calyx not membranous; 4-16 in.



Leaves
entire or
lobed.
linear.

Leaves *entire, silky*; flowering-stem striate; spike almost globular; 4-8 in.
Leaves *deeply lobed C*, hairy; flowering stem not striate; spike elongated;

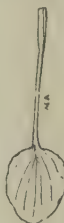


wings of calyx membranous; 1-10 in.

Leaves *lanceolate, flat, entire LA*, 3-5 ribbed;



Leaves *abruptly narrowed* into long petiole MA, usually plabrous; flowering-stem not much longer than leaves; 4-16 in.



flowering-stem 5-ribbed; spike oval, 4-12 in.

5. P. lanceolata L. Ribwort Plantain. VC.
Pastures; Apr.-Oct. P.

6. P. major L. Greater Plantain. VC.
Roadsides; pastures; June-Oct. P.

Leaves
entire, not
linear.

Leaves *not abruptly narrowed*, petiole short ME, finely hairy; flowering-stem much longer than leaves; 8-12 in.



7. P. media L. Hoary Plantain.
Pastures; May-Aug. P.

V. officinalis L. Common Vervein.
Roadsides; waste places;
June-Oct. P.

I. Littorella Berg, p. 142. Littorel.

II. Plantago L., p. 142. Plantain.

1. L. lacustris L. Littorel.

Margins of lakes and ponds,
or submerged; June-Aug. P.

1. P. arenaria W. and K. Sand Plantain. Loc.

Sandy ground; June-Aug. A.

2. P. maritima L. Sea Plantain.
Sea-shore; June-Sept. P.

***3. P. argentea L. B. Waste places; June-Aug. P.**

4. P. Coronopus L. Buck's-horn Plantain. C.
Sandy or gravelly places;
June-Sept. A. or B.

5. P. lanceolata L. Ribwort Plantain. VC.
Pastures; Apr.-Oct. P.

6. P. major L. Greater Plantain. VC.
Roadsides; pastures; June-Oct. P.

7. P. media L. Hoary Plantain.
Pastures; May-Aug. P.

Leaves all radical.

PLUMBAGINACEÆ.

Leaves broader towards apex LI;

Leaves linear (Figs. AM, PG, below); flowering-stem not branched; inflorescence globular.

I. *Statice* L. *Sea Lavender*. —

Secondary veins
absent or branching
from base of midrib
throughout its length
(Fig. LI, above).

Calyx hairy along only 2 of its nerves; bract of flower longer than broad; spikes dense; 4-16 in.
Calyx hairy along all its nerves; bract of flower as broad as long; spikes less dense; 4-8 in.

Branches often flowerless; bract of flower membranous, white; 3-16 in.

Secondary veins
absent or branching
from base of midrib
only.

Branches all or
nearly all flowering;
bracts green.
Stem not bearing branches in its lower part; leaves not acute; 4-16 in.
Stem bearing branches throughout its length; leaves almost acute; 4-16 in.

II. *Armeria* Willd. *Thrift*. —

Leaves very narrow, margins parallel
AM, only 1 vein visible;

Leaves narrow, gradually becoming
acute PG, 3-7 veined;



calyx-teeth shorter than breadth of
sepal; 2-8 in.
[Sea Pink.]

calyx-teeth longer than breadth of
sepal; 4-20 in.

flowering-stem branched.

I. *Statice* L., p. 143.
Sea Lavender.

II. *Armeria* Willd., p. 143.
Thrift.

1. *S. Limonium* L.
Sea Lavender.

Muddy salt marshes: July-Sept. P.

2. *S. bahusiensis* Fr. R.
Muddy salt marshes: July-Sept. P.

3. *S. bellidifolia* Gouan
Matted Sea Lavender, Loc.
Salt marshes: July-Aug. P.

4. *S. Dodartii* Girard.
Rocky-sea-shores: July-Sept. P.

5. *S. occidentalis* Lloyd
Rocky sea-shores: July-Sept. P.

1. *A. maritima* Willd.
Common Thrift, C.
Rocky and sandy sea-shores; mountains: May-Sept. P.

2. *A. plantaginea* Willd.
Plantain Thrift, Loc.
Heaths and sandy places: June-Sept. P.

AMARANTACEÆ. Several exotic species are cultivated as ornamental plants, e.g. Love-lies-bleeding, Prince's-feather.

I. *Amarantus* L. *Amaranth*. —

Stem hairy; leaves oval, rounded R;
stamens 5;



bracts spinous, twice as long as flowers;
8-28 in.

*1. *A. retroflexus* L. R.
Waste places: July-Sept. A.

Stem glabrous; leaves oval, oblong B;
stamens 3;



bracts shorter than flowers; sepals
acute; 8-24 in.

*2. *A. Blitum* L. R.
Waste places; walls: July-Sept. A.

CHENOPODIACEÆ.

It is usually difficult to determine members of this N.O.; they should be gathered when in fruit. Several are cultivated, e.g. Spinach, Beetroot.

Stem green, jointed, fleshy; leaves undeveloped; flowers in dense cylindrical spikes SA.



I. *Salicornia* L., p. 144.
Marsh Samphire.

Leaves sessile or enlarged at base. Leaves enlarged at base K; perianth surrounding fruit bearing a membranous appendage.



II. *Salsola* L., p. 144.
Saltwort.

Leaves semi-cylindrical SU; membranous appendage absent.



III. *Suaeda* Forsk., p. 145.
Sea Blite.

Perianth almost triangular, enlarging considerably after flowering; fruit surrounded by 2 perianth-segments, almost free.

Leaves petiolate or narrowed at base. Plant not having above characters.

Leaves white, silvery on both surfaces, mealy.

Leaves green, (Perianth becoming as hard as wood; lower part of fruit adhering to perianth.)

or whitish below.

Perianth green or fleshy; fruit not adherent.

IV. *Atriplex* L., p. 145.
Orache.

V. *Obione* Gart., p. 146.
Sea Purslane.

VI. *Beta* L., p. 146.
Beet.

VII. *Chenopodium* L., p. 146.
Goosefoot.

I. *Salicornia* L. *Marsh Samphire.*—(Fig. SA, above.)

Plant { Plant annual, fleshy, usually erect; root simple; perianth-segments in fruit winged transversely; 4-12 in. [Glasgowwort.]

Plant { Plant perennial; main branches woody, creeping, rooting; fleshy branches erect; perianth-segments in fruit not winged transversely; 8-24 in. [Glasgowwort.]

1. *S. herbacea* L.
Herbaceous Marsh Samphire.

Salt marshes: Aug.-Sept. A.

2. *S. radicans* Sm.
Woody Marsh Samphire.

Loc.

Salt marshes: Aug.-Sept. P.

II. *Salsola* L. *Saltwort.*—(Fig. K, above.)

Leaves hairy, spinous; flowers sessile, axillary; stem procumbent, hard, striated white, green or purple; 4-16 in.

1. *S. Kali* L.

Prickly Saltwort.

Sea-shores: July-Aug. A.

III. *Suaeda* Forsk. *Sea Bile*.—(Fig. SU, p. 144.)

- Leaves *fleshy*, flat above, rounded below; flowers in groups of 2-3. Stem *woody, whitish*; lower branches often flowerless; styles 3; 1-3 ft.
- Stem more or less *herbaceous*; branches nearly all flowering; styles usually 2; 4-20 in.

IV. *Atriplex* L. *Orache*.—

Plant *shrubby, perennial*; leaves usually entire, white on both surfaces; 2-8 ft.

Perianth-segments surrounding fruit *free, flat, circular or oval*; leaves on middle of stem triangular; 1-5 ft.



Upper leaves *lanceolate* AP; 1-4 ft.

Leaves *linear*, margins parallel; 1-2½ ft.



Leaves *deeply toothed* LC, mealy beneath; flowers in dense spikes; perianth *silvery-white*; 6-16 in.

Leaves *less deeply toothed*, more nearly triangular, lower ones hastate; spikes less dense or interrupted; perianth in fruit *green*; 8-32 in.

1. *S. fruticosa* Forsk.
Shrubby Sea Bile. Loc.
Slightly sea-shores; July-Sept. P.
2. *S. maritima* Dumort.
Herbaceous Sea Bile.
Salt marshes; sandy sea-shores;
July-Sept. A.

- *1. *A. Halimus* L.
Shrubby Orache.
Sea-coasts; Aug.-Sept. P.
- *2. *A. hortensis* L. H
Garden Orache.
Sea-coasts; kitchen-gardens;
Aug.-Sept. A.

3. *A. patula* L. C.
Common Orache.
Waste places; July-Oct. A.

4. *A. littoralis* L.
Grass-leaved Orache.
Salt marshes; July-Sept. A.

5. *A. laciniata* L.
Frosted Orache.
Sea-coasts; July-Sept. A.

6. *A. hastata* L.
Hastate Orache. C.
Waste places; June-Sept. A.

Plant *herbaceous, annual*.

1. The genus *Spinacia* (Spinach) differs from *Atriplex* in having 3-4 styles instead of 2, and in not being mealy. Two species are cultivated: *S. glabra* Mill. H
perianth not spinous, and *S. oleracea* L. H, perianth spinous.

V. **Obione** Cærtn. *Sea Purslane*.—

Fruiting perianth stalked PE; leaves *alternate*; stem herbaceous, erect, 6-12 in.



1. **O. pedunculata** Moq.
Stalked Sea Purslane. VR.
Salt marshes; Aug.-Sept. A.

Fruiting perianth sessile; leaves *opposite*; stem woody, decumbent; 1-2 ft.



2. **O. portulacoides** Moq.
Sea Purslane. C.
Sea cliffs, salt marshes; Aug.-Oct. P.

VI. **Beta** L. *Beet*.—

Leaves *ovate* VL; stems erect; main root fleshy, rootlets slender; 1-4 ft.



1. **B. vulgaris** L.¹ ✠
Common Beet.
(cultivated; July-Sept. A or B.

Leaves somewhat *triangular, acute* MA; stems prostrate or decumbent; root not fleshy, hard, ramifying; 1-3 ft.



2. **B. maritima** L.
Sea Beet.
Shingly or sandy sea-shores; June-Aug. P

VII. **Chenopodium** L. *Goosefoot*.—

Leaves *hastate, 2-pointed at base* BH; plant *perennial*;



spikes not bearing large leaves; seeds brown, smooth; 4-32 in. [Allgood.]

1. **C. Bonus-Henricus** L. ✠
Good King Henry. P.
Roadsides; June-Sept.

Leaves having at least 20 sharp, irregular teeth M;



leaves green, shining, mealy when young; seeds finely rugose; 8-20 in.


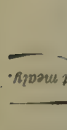
2. **C. murale** L.
Nettle-leaved Goosefoot. R.
Waste places; July-Sept. A.

Leaves *entire, oval* PO;



seeds black, shining; plant odourless; 4-32 in.

3. **C. polyspermum** L.
Many-seeded Goosefoot.
Fields; waste places; July-Sept. A.

<p>Leaves not mealy.</p>	<p>Leaves with few, coarse teeth H; seeds large, rugose; 1-3 ft.</p>		<p>4. <i>C. hybridum</i> L. <i>Maple-leaved Goosefoot.</i> R. Fields; waste places: July-Sept. A.</p>
<p>Leaves with less than 20 teeth.</p>	<p>Leaves slightly toothed; fruit red, succulent; ½-2 ft.</p>		<p>*5. <i>C. capitatum</i> Asch. <i>Strawberry Bite.</i> R. Waste places: July-Sept. A. 6. <i>C. rubrum</i> L. <i>Red Goosefoot.</i> Waste places: July-Sept. A.</p>
<p>Leaves mealy, at least on one surface.</p>	<p>Leaves entire, oval O, mealy on both surfaces;</p>		<p>7. <i>C. botryodes</i> Sm. R. Sea-coasts: Aug.-Sept. A.</p>
<p>Leaves mealy, at least on one surface.</p>	<p>Upper leaves 6-10 times longer than broad AL, narrow, entire or nearly so; seeds smooth, sharply keeled; 1-2½ ft.</p>		<p>8. <i>C. album</i> L. <i>White Goosefoot.</i> C. Fields; waste places: July-Sept. A.</p>
<p>Leaves mealy, at least on one surface.</p>	<p>Leaves almost as broad as long UR;</p>		<p>9. <i>C. Vulvaria</i> L. <i>Stinking Goosefoot.</i> R. Waste places: July-Oct. A.</p>
<p>Leaves mealy, at least on one surface.</p>	<p>Leaves 2-3 times longer than broad FL; seeds</p>		<p>10. <i>C. urbicum</i> L. <i>Upright Goosefoot.</i> R. Waste places: July-Sept. A.</p>
<p>Leaves mealy, at least on one surface.</p>	<p>Leaves almost as broad as long OP; seeds not keeled; 12-20 in.</p>		<p>11. <i>C. ficifolium</i> Sm. R. Damp waste places: July-Sept. A.</p>
<p>Leaves mealy, at least on one surface.</p>	<p>Seeds almost or quite smooth G.</p>		<p>*12. <i>C. opulifolium</i> Schrad. R. Waste places: July-Sept. A.</p>
<p>Leaves mealy, at least on one surface.</p>	<p>Leaves longer than broad GL; seeds acutely keeled; 4-16 in.</p>		<p>13. <i>C. glaucum</i> L. <i>Glaucous Goosefoot.</i> R. Waste places: July-Sept. A.</p>

1. It is the var. *rapacea*. The Mangel Wurzel and Beetroot are varieties.—2. Var. *viride* L.: leaves green, scarcely mealy.—3. Var. *intermedium* M. and K. leaves deeply toothed; mealy below; R.

OLYGONACEÆ.

As the various species are difficult to determine, it is usually necessary to choose plants with well developed fruits.

Stigmas
fringed RC;
flowers
greenish
or reddish.

Perianth segments 4, 2 inner ones enlarged in fruit; *stigmas* 2.

Perianth segments 6 C, 3 inner ones enlarged in fruit; *stigmas* 3 RC.



Stigmas entire,
rounded, 3 or
2 FA, PE;

perianth segments 5 F, almost equal; flowers white, pink, rose or
greenish-white.

I. *Oxyria* Hill. *Oxyria*.—

Leaves almost all radical, kidney-shaped, petiole long; inflorescence branched, erect; fruit surrounded by a
[Mountain Sorrel.]

1. *O. digyna* Hill.

Kidney Sorrel,
Rocky mountain
pastures:
July-Aug. P.

II. *Rumex* L. *Dock*.—

Leaves acid,
2-lobed at
base or
laterally S,

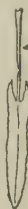
Leaves about as long as
broad S;

fruiting perianth membranous; 1-2 ft.



Leaves much
longer than
broad A, AL.
flowers
diæctous,
monœcious,
or perfect.

Lobes of leaf pointing downwards A; 1-2½ ft.



Lobes of leaf spreading, or
pointing upwards, AL; 4-20
in.



Leaves lanceolate,
lower ones 1-2 ft.
long; whorls
crowded, upper
ones leafless AQ.

Leaves all tapering at base AQ; inner perianth-
segments tubercled, triangular; 3-6 ft.



Lower leaves somewhat cordate at base; inner perianth-segments smooth, cordate;
3-4 ft.

I. *Oxyria* Hill, p. 148.
Oxyria.II. *Rumex* L., p. 149.
Dock.III. *Polygonum* L., p. 150.
Polygonum.'1. *R. scutatus* L.

French Sorrel.
Walls; rocks; waste
places:
May-Aug. P.

2. *R. Acetosa* L. ✠
Sorrel. C.

Meadows; pastures: May-July. P.

3. *R. Acetosella* L.
Sheep's Sorrel. VC.

Dry pastures; May-July. P.




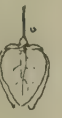
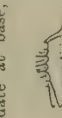
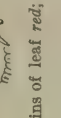
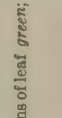
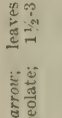
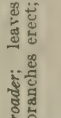
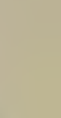
4. *R. Hydrolapathum*
Huds.¹

Great Water Dock.
Margins of rivers; ditches:
July-Aug. P.

5. *R. aquaticus* L.
Smooth-fruited Dock.

Wet places: July-Aug. P.

6. *R. pulcher* L.
Fiddle Dock.
Dry waste places: July-Sept. P.
7. *R. maritimus* L.
Golden Dock. P.
Marshes: July-Sept.
8. *R. limosus* Thuill.
Yellow Marsh Dock. R.
Marshes: July-Sept. P.
9. *R. crispus* L.
Curled Dock. VC.
Roadsides; pastures: June-Aug. P.
- *10. *R. alpinus* L.
Monk's Rhubarb.
Waste places: Aug.-Sept. P.
11. *R. obtusifolius* L.
Broad-leaved Dock. C.
Roadsides; pastures: June-Sept. P.
12. *R. sanguineus* L.
Red-veined Dock. R.
Woods; damp waste places: June-Aug. P.
13. *R. nemorosus* Schrad.
Wood Dock. C.
Woods; shady waste places: June-Aug. P.
14. *R. conglomeratus* Murr.
Clustered Dock.
Wet waste places: July-Sept. P.
15. *R. rupestris* Le Gall.
Sea-coasts: June-Sept. P.

<p>Radical leaves in a rosette, fiddle-shaped PU;</p> 	<p>groups of flowers all provided with a small bract; inner perianth-segments toothed, teeth stiff; 1-1½ ft.</p> 	<p>Teeth longer than breadth of perianth-segment M; branches short; 8-24 in.</p> 	<p>Teeth shorter than breadth of perianth segment PA; branches slender; 8-24 in.</p> 	<p>Inner perianth-segments entire or minutely crenate C; upper one tubercled; leaves wavy, lanceolate; 2-3 ft.</p> 	<p>Inner perianth-segments entire, smooth; leaves cordate at base, petioles grooved; 1-3 ft.</p> 	<p>Inner perianth-segments 3-5 toothed on each side O, one or more tubercled; 2-3 ft.</p> 	<p>Stem and veins of leaf red; 1-3 ft.</p> 	<p>Stem and veins of leaf green; 1½-3 ft.</p> 	<p>Segments narrow; leaves ovate-lanceolate; 1½-3 ft.</p> 
<p>Radical leaves less than 1 foot in length.</p>	<p>Radical leaves not in a rosette, and not fiddle-shaped.</p>	<p>Inflorescence not leafy at apex.</p>	<p>Inflorescence leafy from base to apex.</p>	<p>Inner perianth-segments not cordate O, N, NE, CG.</p>	<p>Inner perianth-segments cordate C.</p>	<p>Inner perianth-segments toothed or entire. N, NE, CG.</p>	<p>Inner perianth-segments tubercled.</p>	<p>Upper segment tubercled.</p>	<p>All 3 segments tubercled.</p>

1. *Var. maximus* Schreb.: radical leaves heart-shaped at base; R.

III Polygonum L. Polygonum. —

- Stems *not prickly* FG. } Leaves *gradually acute* FG; flowers white or pinkish; 1-2 ft.
 Stems *not twining* FG. } Leaves *abruptly acute*; flowers greenish-white; 3-6 ft.
 Leaves *cordate or sagittate* FG, CO. } Stem *prickly*, prickles reflexed; flowers white; $\frac{1}{2}$ -2 fl.
 Stems *twining* CO; flowers greenish. } Fruiting perianth *3-winged* D; fruits shining; stem rounded; 1-5 ft.
 Petiole *winged* B; } fruit triangular; underground stem thick, twisted; 8-24 in. [8 snakeweed.]
 Inflorescence *terminal*, or *scaly*, or rarely branched. } Leaves *narrow*, margins *revolute*; fruit triangular; small red bulbs in axils of lower leaves; 4-8 in.
 Petiole *not winged* A. } Leaves *oblong* A, usually floating, margins *not revolute*; fruit oval, flat; plant usually aquatic, rooting, variable; 1-3 ft. spike sometimes branched; 1-3 ft.
- *1. *P. Fagopyrum* L. ✠
Buckwheat.
 Cultivated; waste places: July-Sept. A.
- *2. *P. cuspidatum* S. & Z.
Japanese Polygonum.
 Gardens; waste places: Aug.-Sept. P.
- *3. *P. sagittatum* L.
 VR.
 Margins of streams: July-Oct. A.
4. *P. dumetorum* L.
Copse Polygonum.
 Woods; thickets: July-Sept. A.
5. *P. Convolvulus* L.
Black Bindweed. C.
 Fields; waste places: June-Sept. A.
6. *P. Bistorta* L. ✠
Bistort. Loc.
 Damp meadows: June-Sept. P.
7. *P. viviparum* L.
Viviparous Bistort.
 Mountain pastures: June-Aug. P.
8. *P. amphibium* L.
Amphibious Persicaria. C.
 Ponds; streams; damp fields: July-Aug. P.

Stem woody at base; leaves glaucous, margins revolute; fruits shining; 4-16 in.

Flowers in small clusters, axillary AVI; stipules ragged AV; glabrous; leaves almost sessile.

Stem herbaceous; leaves flat.

Fruits not shining; 4-24 in.



Fruits shining; 4-24 in.

Taste hot and biting like pepper; stipules fringed with long and short cilia H;



petiole glabrous H; 1-3 ft.

Cilia short L; sepals glandular, strongly veined.



Stipules not always fringed;

raceme dense, cylindrical; 1-3 ft.

Taste not hot and biting; petioles and stipules usually hairy L, PS.



Cilia long PS; sepals not glandular, not strongly veined P.

Racemes dense, oblong or cylindrical PC; ½-3 ft.



Racemes interrupted, usually drooping; ½-3 ft.

Racemes slender.

Racemes lax, erect; branches many, spreading; ½-2 ft.

9. *P. maritimum* L.
Sea Knotgrass, Loc.
Sandy coasts; Aug.-Sept. P.

10. *P. aviculare* L.
Knotgrass, VC.
Waste places; June-Oct. A.

11. *P. Robertii* Lois.
Sandy coasts; Aug.-Sept.

12. *P. Hydropiper* L.
Water-pepper Persicaria, C.
Wet places; July-Oct. A.

13. *P. lapathifolium* L.
Pale Persicaria.
Damp places; July-Sept. A.

14. *P. tomentosum* Schr.

Large Persicaria.
Damp places; July-Sept. A.

15. *P. Persicaria* L. ✠
Persicaria, VC.
Damp places; July-Sept. A.

16. *P. mite* Schr. R.
Wet places; July-Sept. A.

17. *P. minus* Huds. R.
Slender Persicaria, R.
Wet places; July-Sept. A.

Inflorescences many, terminal and axillary AVI, PC.

Flowers in spike-like racemes PC; stipules not ragged.

Leaves lanceolate or oblong, not lobed

THYMELACEÆ. The Daphnes, being early-flowering and sweet-scented, are cultivated in gardens. *Laurus nobilis* [Bay Laurel or Bay-sweet] belongs to the closely allied N.O. *Laurtnææ*.

I. Daphne L. Daphne.—

Shrub; calyx falling early. } Flowers yellowish-green; leaves leathery, evergreen; flowers and fruits near apex of stem LA; berries black; 2-4 ft.

} Flowers rose or purple, rarely white; leaves soft, appearing after the flowers, deciduous; flowers and fruits occurring throughout length of stem M; berries red; 1-3 ft.



1. **D. Laureola L.**
Spurge Laurel. Loc.
Woods: Feb.-Apr. P.



2. **D. Mezereum L.** ✠
Mezeron. R. P.
Woods: Feb.-Apr. P.

SANTALACEÆ.

I. Thesium L. Thesium.—(Figs. TH, T, p. XXX.)

Plant green, semi-parasitic on roots and underground stems of neighbouring plant; branches procumbent, spreading; root branched; fruit longer than perianth HM; 8-12 in.



1. **T. humifusum DC.**
Bastard Toadflax. Loc.
Limestone pastures: June-Aug. P.

ELÆAGNACEÆ.

I. Hippophae L. Hippophae.—(Fig. HI, p. XXVII.)

Shrub, thorny; leaves linear-lanceolate, silvery below; flowers greenish; berries orange-yellow; 3-8 ft.

1. **H. rhamnoides L.** ✠
Sea Buckthorn. Loc. P.
Sand dunes: May-June. P.

ARISTOLOCHIACEÆ. Certain species are cultivated in gardens; e.g. *Aristolochia Sipho*, a tall climbing plant with reflexed flowers.

Perianth globular at base, funnel-shaped above CL;



stamens 6; stem erect.

I. **Aristolochia L.**,
p. 152.



Perianth bell-shaped E; *stamens 12*; stem creeping E.

II. **Asarum L.**, p. 152.
Asarum.

I. Aristolochia L. Aristolochia.—(Fig. CL, above.)

Leaves alternate, petiolate, cordate-triangular, glabrous; mouth of perianth oblique; flowers yellowish; 16-32 in.

*1. **A. Clematitis L.** ✠
Birthwort. R.
Shady wasteplaces: June-Sept. P.

II. Asarum L. Asarum.—(Fig. E, above.)

Leaves opposite, cordate at base, rounded, evergreen, petiole long; flowers solitary, greenish-purple; plant with a pepper-like odour; 4-6 in.

*1. **A. europæum L.** ✠
Asarabacca. R.
Damp shady places: Apr.-May. P.

EMPETRACEÆ.

I. Empetrum L. Crowberry.—(Fig. E, p. XXI.)

Shrub, heath-like; leaves leathery, evergreen, dark-green above, whitish below, margins revolute, almost meeting; flowers dioecious, small, sessile, purple; fruit fleshy, black; 4-18 in.

1. E. nigrum L.
Crowberry.
Moors: Apr.-May. P

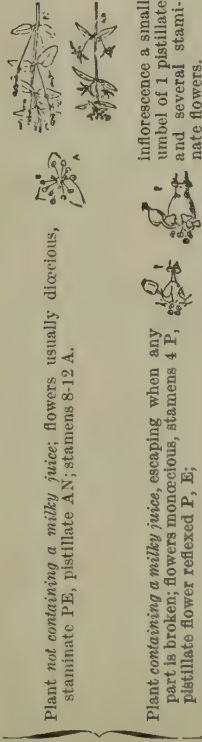
EUPHORBIACEÆ. It is often difficult to determine the species in the genus *Euphorbia*; plants bearing fruits should, therefore, be examined.



Shrub:

flowers monœcious, clusters axillary; leaves leathery, evergreen, entire BU.

I. Buxus L., p. 153.
Box.



Plant *not* containing a milky juice; flowers usually dioecious, staminate PE, pistillate AN; stamens 8-12 A.

Stem herbaceous.

Plant containing a milky juice, escaping when any part is broken; flowers monœcious, stamens 4 P, pistillate flower reflexed P, E;

inflorescence a small umbel of 1 pistillate and several staminate flowers.

III. Euphorbia L., p. 154.
Spurge.

I. Buxus L. Box.—(Fig. BU, above.)

Leaves opposite, oval, shining above; stamens 4; styles 3; flowers greenish-yellow; 1-10 ft.

1. B. sempervirens L. ✕
Common Box. R.
Hilly chalky districts: Mar.-May. P.

II. Mercurialis L. Mercury.—

Flowering stem not branched from the base, springing from an underground stem; pistillate flowers on long stalk M; 8-16 in.



1. M. perennis L.
Dog's Mercury. C.
Woods; hedges: Mar.-May. P.

Flowering stem branched usually from base, continuous with slender root; pistillate flowers almost or quite sessile; 8-16 in.

2. M. annua L. ✕
Annual Mercury.
Cultivated and waste places: June-Nov. A.

III. *Euphorbia* L. *Spurge*.—

Leaves opposite; bracts forming a cross L;



leaves glaucous below; umbel of 2-5 forked rays; fruit smooth; 2-4 ft.

1. *E. Lathyris* L. $\frac{1}{4}$ *Caper Spurge*.

Near villages: June-July. B.

Leaves crowded in a rosette near middle of stem S;



bracts rounded, connate; fruit almost smooth; 1 1/2-3 ft.

2. *E. amygdaloides* L. *Wood Spurge*, Woods; shady places: Apr.-May. P.

Leaves leathery, crowded, oblong PR, very glaucous;



fruit finely tubercular; bracts longer than broad; 12-20 in.

3. *E. Paralias* L. *Sea Spurge*. Sandy coasts: July-Sept. P.



Main umbel of many forked rays.

Branches often barren C;



leaves narrow, particularly those on barren branches; 8-20 in.

4. *E. Cyparissias* L. *Cypress Spurge*. VR. Roadsides: June-Sept. P.

Branches usually flowering ES;



leaves oblong; 1-3 ft.

5. *E. Esula* L. *Leafy Spurge*. Near water: June-Aug. P.

Leaves neither leathery, nor crowded, nor very glaucous.

Leaves neither opposite nor crowded in a rosette towards middle of stem.

Plant perennial; leaves glaucous, narrow, broader above; umbel usually of 5 forked rays; 6-12 in.

6. *E. portlandica* L. *Portland Spurge*. Sandy coasts: May-Sept. P.

Main umbel of 2-5 forked rays.

Plant annual; umbel usually of 3 forked rays.

Leaves sessile, linear EX; bracts narrow EX; 4-8 in.



7. *E. exigua* L. *Dwarf Spurge*. C. Fallow fields: May-Oct. A.

Leaves shortly petiolate, ovate PE; bracts oval; 6-12 in.



8. *E. Pepus* L. *Petty Spurge*. C. Fields; waste places: June-Oct. A.

Leaves *opposite*, minutely *stipulate*, petiolate, falling before flowers appear; bracts oblique, resembling foliage leaves; plant prostrate, glaucous, purplish; 2-14 in.

9. *E. Pepis* L.
Purple Spurge. VR.
Sandy coasts: July-Sept. A.



Glands *dark red or purple*; leaves narrowed at base D or slightly petiolate; fruit tubercled; 12-20 in.

*10. *E. dulcis* L. R
Woods: May-June. P

Fruit *smooth*; leaves finely toothed in upper half, broad and rounded at apex HE; 8-20 in.



11. *E. Helioscopia* L. H
Sun Spurge. C.
Fields: June-Oct. A.

Plant *perennial* with an underground stem.

Leaves *minutely toothed*, hairy on both surfaces; fruit hairy or smooth, *tubercles small*; 1-2 ft.

12. *E. pilosa* L.
Hairy Spurge. VR.
Damp shady places: June-July. P.

Glands *yellow, or sometimes brown*.

Fruit *tubercled*; leaves not broad and rounded at apex.

Leaves *entire*, glabrous or hairy below; fruit glabrous, *tubercles large and cylindrical*; glands brown; 1-2 ft.

13. *E. hibernia* L.
Irish Spurge. Loc.
Shady places: June-July. P.

Plant *annual* with a slender root.

Fruit *slightly furrowed*, tubercles *small* PL; 1-3 ft.;



14. *E. platyphyllos* L.
Broad Spurge. R.
Fields; shady places: June-Sept. A.

Fruit *deeply furrowed*, tubercles *prominent* ST; 1-4 ft.



15. *E. stricta* L. R.
Fields; shady places: June-Sept. A.

Leaves not *opposite or stipulate*.

Involucral glands *rounded or oval* H.



CALLITRICHACEÆ. The plants are all aquatic. Several species have been described; they are difficult to determine, their characters not being easy to define. Three of them are given, but as varieties, in the foot-note.

I. Callitriche L. Water Starwort.—(Fig. CA, p. XXX.)

Stem creeping and rooting in mud, or floating in water; leaves all submerged and linear; or, apical leaves floating on water, oval, and forming a rosette; flowers minute, solitary, axillary, often monœcious.

1. **C. aquatica** Huds.¹
Water Starwort. C.
Shallow running water; wet
mud: Apr.-Sept. A or P.

CERATOPHYLLACEÆ. Aquatic plants, usually submerged.

I. Ceratophyllum L. Hornwort.—

Leaf segments fine, linear, coarsely toothed, almost smooth; fruit armed with 2 spines at base and terminated by style, curved and as long as itself D.



Leaf segments finely toothed, rough to the touch; fruit without spines and terminated by short style S.
[Hornwort.]



1. **C. demersum** L.
Hornwort.
Slowly running water: June-
July. P.

2. **C. submersum** L.
Slowly running water: June-
July. P.

ULMACEÆ. Many species, hybrids and varieties of Elm are planted in parks and avenues.

I. Ulmus L. Elm.—(Fig. U, p. XXVII.)

Fruit winged, notched, 1-seeded. } Seed-cavity above centre of wing; leaves rough, twice toothed, secondary veins often forked, apex acute, base oblique, petiole short; 60-120 ft.

Seed-cavity at or below centre of wing; leaves larger, rougher, apex with a longer point; 60-120 ft.

1. **U. campestris** L. ♀
Common Elm.
Woods; hedges: Mar.-Apr. P.

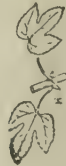
2. **U. montana** Sm.
Wych Elm.
Woods; hedges: Mar.-Apr. P.

CANNABINACEÆ.

Stem erect; leaves digitate C.



Stem twining; leaves 3-5 lobed H.



I. Cannabis L. Hemp.—(Fig. C, above.)

Flowers diœcious, green; leaves opposite, petiolate, lobes toothed; plant strongly odorous; 1-6 ft.

II. Humulus L. Hop.—(Fig. H, above.)

Flowers diœcious, greenish or yellowish; fruits and scales bearing yellow, odorous glands; 4-12 ft.

- I. **Cannabis** L., p. 156.
Hemp.

- II. **Humulus** L., p. 156.
Hop.

- *1. **C. sativa** L. ♀
Hemp.

Cultivated; waste places: June-
Sept. A.

1. **H. Lupulus** L. ♀
Hop.
Hedges: July-Sept. P.

URTICACEÆ. The two preceding natural orders, particularly the latter, are often included in the N.O. Urticaceæ. Cultivated and closely allied plants are the Fig and the Mulberry.

Leaves *opposite, toothed* (Figs. D, U, below); flowers *diœcious* or *monœcious*; plant covered with stinging hairs.

Leaves *alternate, entire or almost entire* P; flowers *monœcious* or sometimes perfect;



I. *Urtica* L., p. 157.
Nettle.

I. *Urtica* L. *Nettle*.—

Flowers *diœcious*; plant *perennial*; leaves *cordate* at base D; spikes longer than petiole, branched D; 1-5 ft.



1. *U. dioica* L. \star
Common Stinging Nettle.
C.

Waste places: June-Sept. P.

Flowers
monœcious;
plant *annual*.



spikes shorter than petiole, almost unbranched; 8-20 in.

2. *U. urens* L.
Small Stinging Nettle. C.

Waste places: May-Oct. A.

Leaves *broadier at base* or slightly *cordate*; pistillate flowers in globular heads; 8-40 in.

*3. *U. pilulifera* L.
Roman Nettle. VR.

Waste places: July-Oct. A.

II. *Parietaria* L. *Pellitory*.—(Fig. P, above.)

Leaves hairy; flowers in axillary sessile clusters, greenish or brownish; 8-24 in.

1. *P. officinalis* L. \star
Wall Pellitory.

Old walls; stony places: June-Oct. P.

JUGLANDACEÆ. The wood, bark, leaves and fruits of the Walnut all have their various uses.

I. *Juglans* L. *Walnut*.—

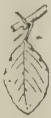
Tall tree; leaves *alternate, pinnate* (Fig. J, p. XXVII), glabrous, strongly odorous; staminate flowers in pendulous spikes, greenish.

1. *J. regia* L. \star
Walnut.

Cultivated: Apr.-May. P.

1. Var. *platycarpa* Kütz. (C. stagnalis Scop.): upper leaves oval; styles persistent, recurved at maturity; var. *hamulata* Kütz. (C. intermedia Hoffm.): leaves all linear; bracts falling early; styles persistent, later recurved; var. *vernalis* Koch (C. palustre L.): upper leaves oval; styles erect, falling early

CUPULIFERÆ. This N. O. includes the greater number of our forest trees.



Leaves entire or obscurely toothed F;

staminate flowers in globular spikes, pendulous.

I. *Fagus* L., p. 158.
Beech.



Leaves sinuate or deeply crenate Q;

staminate flowers in long interrupted spikes, pendulous.

II. *Quercus* L., p. 158.
Oak.



Leaves glabrous, about 4 times longer than broad CV; flowers appearing after the leaves.

III. *Castanea* Hill, p. 158.
Spanish Chestnut.



Leaves hairy; young stem glandular A; flowers appearing before the leaves.

IV. *Corylus* L., p. 158.
Hazel.



Leaves hairy below, along veins; secondary veins unbranched B; flowers appearing with the leaves.

V. *Carpinus* L., p. 158.
Hornbeam.

I. *Fagus* L. *Beech.*—(Fig. F, above.)

Stamens 8-12; nuts surrounded by involucre of 4 prickly bracts S; young leaves ciliate; stipules becoming brown and pendulous, falling early; 60-100 ft.



1. *F. sylvatica* L. ✠
Common Beech. C.
Woods: Apr.-May. P.

II. *Quercus* L. *Oak.*—(Fig. Q, above.)

Stamens 5-10; nut surrounded at base by cup-shaped involucre; 60-125 ft.

1. *Q. Robur* L. ✠
British Oak. C.
Woods: Apr.-May. P.

III. *Castanea* Hill. *Spanish Chestnut.*—(Fig. CV, above.)

Staminate flowers in long cylindrical spike; stamens 8-15; nuts surrounded by spinous involucre bracts; 50-90 ft. [Sweet Chestnut.]

*1 *C. vulgaris* Lam. ✠
Spanish Chestnut.
Plantations: May-June. P.

IV. *Corylus* L. *Hazel.*—(Fig. A, above.)

Spikes of staminate flowers long, pendulous, already formed before beginning of winter; styles of pistillate flower red; nut surrounded by large leafy involucre; 6-15 ft.

1. *C. Avellana* L. ✠
Common Hazel. VC.
Woods; hedges: Feb.-Apr. P.

V. *Carpinus* L. *Hornbeam.*—(Fig. B, above.)

Pistillate flowers in loose catkins; nut at base of leafy, 3-lobed involucre (B); leaves doubly toothed; 15-90 ft.



1. *C. Betulus* L. ✠
Hornbeam. Loc.
Woods: Apr.-May. P.

Stamens many AL; bracts *toothed* or *cut* AL, TR; perianth cup-shaped surrounding base of pistil TR.



I. **Populus** L., p. 159.
Poplar.

Stamens 1-5 V, PU, T; bracts *entire* V, CL; perianth absent.



II. **Salix** L., p. 159.
Willow.

I. **Populus** L. *Poplar*.—Several species are often planted, including the Lombardy Poplar which is recognised by its erect branches and in this country bears only staminate flowers.

Stamens 12 or more; bracts *glabrous* NI;



leaves longer than broad, apex tapering and not toothed N; 30-90 ft.



1. **P. nigra** L. ✠
Black Poplar.
Damp places; Mar.-Apr. P.

Bracts *deeply cut* (Fig. TR, above); leaves coarsely toothed T, *glabrous*, or *slightly hairy below*, easily shaken by the wind; young branches not white; 30-75 ft.



2. **P. tremula** L. ✠
Aspen.
Woods; Mar.-Apr. P.

Stamens 8; bracts *hairy* (Figs. AL, TR, above.)

Leaves often *shortly lobed* A, very *white* and *cottony below*, sometimes less cottony at end of summer; young branches white; 30-90 ft.



3. **P. alba** L. ✠
White Poplar.
Damp places; Mar.-Apr. P.

Bracts *not so deeply cut* (Fig. AL, above.)

Leaves *rounded*, *never shortly lobed*, smaller, not so cottony and white; 30-90 ft.

4. **P. canescens** Sm.
Grey Poplar.
Damp places; Mar.-Apr. P.

II. **Salix** L. *Willow*. — Many of the species are difficult to determine; as the flowers usually appear before the leaves, it is often necessary to mark the tree the flowering branches of which have been examined, in order to gather its foliage later. Many hybrids occur and show intermediate characters.

1. Var. *sessiliflora* Sm.? leaves petiolate, peduncles of fruits shorter than petioles; var. *pedunculata* Ehrh.: leaves almost sessile; peduncles of fruits long.

Plants not confined to mountain and high elevations.

Tree or shrub; more than 3 ft. high.

Stamens 2 or 3, distinct, anthers yellow; buds not opposite.

Branches long, slender, supple, not knotted.

Branches not glaucous; catkins stalked.

Branches more or less erect.

Branches
glabrous,
breaking
easily
at their base,
particularly
during
spring.

Branches
more or less
hairy in
upper part,
not breaking
easily at
their base.



Stamens 3 T; leaves
glabrous; stipules
persistent TR;
bracts yellowish.

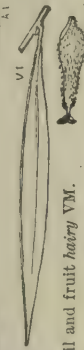


Stamens 2 F; leaves hairy, later glabrous, often
glaucous below, stipules falling early; bracts
yellowish.



Bracts yellowish; leaves
lanceolate A; pistil and
fruit glabrous A.L.

Bracts brown
or nearly
black; leaves
linear VI; pistil and fruit hairy VM.



Branches glaucous; catkins sessile; bracts black; leaves linear-lanceolate.

Undershrub usually less than 3 ft. high; stem creeping underground, rooting; catkins cylindrical R; leaves often silky below; stalk of pistil 2-3 times as long as the yellow nectary at its base.

Stamens usually 5; leaves shining when old, viscous when young, fragrant, glabrous, toothed, thick; staminate catkins slightly pendulous; ovary glabrous.

Stamen 1, formed by 2 united stamens PU;



bracts glabrous, greenish-yellow or purple; anthers purple or black.



Branches more or less knotted, not supple; brown or black.

Buds glabrous; leaves wrinkled lengthwise.

Height usually more than 6 ft.; leaves ovate, older ones green and shining above, glabrous.



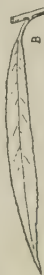
Height usually less than 6 ft.; leaves broader in upper part AU; remaining greyish and hairy.



Buds very hairy, also young branches CN; leaves hairy, greyish below; seldom wrinkled lengthwise.



Branches all drooping; fruit glabrous; leaves linear-lanceolate B, glabrous.



1. *S. repens* L.¹
Creeping Willow. C.
Damp sandy heaths: Apr.-May. P.
2. *S. pentandra* L.
Bay-l. and Willow. P.
River banks: May-June.
3. *S. purpurea* L.²
Purple Willow. P.
River banks: Mar.-Apr. P.
4. *S. Caprea* L. H
Goat Willow. C.
Woods near rivers: Mar.-Apr. P.
5. *S. aurita* L.
Round-eared Willow. C.
Woods near rivers: Mar.-Apr. P.
6. *S. cinerea* L.
Grey Willow. P.
Woods near rivers: Mar.-Apr. P.
7. *S. Babylonica* L.
Weeping Willow. P.
Gardens: Mar.-May.
8. *S. triandra* L.³
Almond-leaved Willow. P.
River banks: Apr.-May.
9. *S. fragilis* L.⁴
Crack Willow. P.
Damp places: Apr.-May
10. *S. alba* L.⁵ H
White Willow. C.
Damp places: Apr.-May.
11. *S. viminalis* L.⁶ H
Osier. P.
Damp places: Apr.-May.
12. *S. daphnoides* Vill.
River banks: Mar.-Apr. P.

- Plants usually confined to mountains and high elevations.
- | | | | | |
|---|---|--|---|---|
| <p>Stems not underground, all more or less erect, not supple.</p> | <p>Leaves toothed, becoming glabrous.</p> | <p>Catkins lateral; leaves elliptical.</p> | <p>Margin of leaf thickened; leaves turning black in drying; 3-9 ft.</p> | <p>13. <i>S. Myrsinites</i> L.
<i>Whorle-leaved Willow</i>. R.
Bogs: June-July. P.</p> |
| | | | <p>Margin of leaf not thickened, only lightly toothed; leaves not turning black so readily; 3-9 ft.</p> | <p>14. <i>S. nigricans</i> Sm.
<i>Dark-leaved Willow</i>.
Watery places: Apr.-May. P.</p> |
| | | | | <p>15. <i>S. phylicifolia</i> L.
<i>Tea-leaved Willow</i>.
Damp places: Apr.-May. P.</p> |
| | | | | <p>16. <i>S. Lapponum</i> L.
<i>Downy Willow</i>.
Damp places: May-June. P.</p> |
| | | | | <p>17. <i>S. lanata</i> L.
<i>Woolly Willow</i>. VR.
Rocky places: May-July. P.</p> |
| | | | | <p>18. <i>S. reticulata</i> L.
<i>Reticulate Willow</i>.
Rocky places: May-July. P.</p> |
| | | | | <p>19. <i>S. herbacea</i> L.
<i>Dwarf Willow</i>.
Rocky places: June-July. P.</p> |

1. Var. *argentea* Sm.: leaves rounded, very silvery below.—2. Var. *rubra* Huds.: filaments of stamens united only in their lower half, R.; var. *Lambertiana* Sm.: catkins larger, leaves very broad; var. *Helix* L.: catkins narrow, leaves very narrow, branches slender.—3. *S. undulata* Ehrh.: bracts hairy at apex, fruit stalk as long as nectary, considered a hybrid between *S. triandra* and *S. alba*; R.—4. Var. *Russelliana* Sm.: branches reddish, leaves very narrow.—5. Var. *etellina* L. (Golden Osier): branches bright yellow.—6. *S. Smithiana* Willd.: differs chiefly from *S. viminalis* in its leaves being white and not silvery below; considered a hybrid between that species and *S. caprea*.

PLATANACEÆ. Several species and varieties of *Platanus* are planted in parks and avenues.

I. Platanus L. Plane Tree.—(Fig. PL, p. XXVII.)

Leaves 3-7 lobed, toothed, hairy below along veins; flowers monoëcious, yellowish or greenish; 30-120 ft.

1. **P. vulgaris** Spach.
Plane Tree.

Cultivated; Apr.-May. P.

BETULACEÆ. The Birch grows readily even in poor soil; the Alder is often planted in watery places and near rivers to bind the soil.

Pistillate catkins *pendulous* B, *solitary*;
scales membranous, deciduous;



leaves usually *acute* BA.



I. **Betula** L., p. 162.
Birch.

Pistillate catkins *erect* G, *several together*;
scales thick, woody, persistent;



leaves *rounded at apex* AG.



II. **Alnus** Hill, p. 162.
Alder.

I. Betula L. Birch.—(Figs. B, BA, above.)

Tree; bark *white*
and *silvery*; leaves

acute, sharply
toothed.

Fruits
flat,
winged.

Leaves *wedge-shaped at base* (Fig. BA); scales of fruiting catkin spreading;
young shoots resinous; 20-75 ft.

Leaves *rounded at base*, broader towards middle; scales of fruiting catkin
erect, young shoots downy; 20-30 ft.

Shrub; bark *dark, purplish*; leaves rounded, not acute, crenate, length usually less than 1½ in.,
petiole very short; 1-2 ft.

II. Alnus Hill. Alder.—(Figs. G, AG, above.)

Tree; bark *grey*; leaves *wedge-shaped at base*, sharply toothed; staminate catkins long, pendulous; fruits
not winged; 20-80 ft.

1. **B. alba** L. ✠
White Birch.

Woods: Apr.-May. P.

2. **B. pubescens** Ehrh.
Birch.

Woods: Apr.-May. P.

3. **B. nana** L.

Dwarf Birch. Loc.

Bogs; moors: May. P.

1. **A. glutinosa** Gært. ✠
Common Alder. C.

Wet places: Feb.-Mar. P.

MYRICACEÆ. This small N.O., represented in the British Flora by a single species, comprises several North American trees and shrubs.

I. Myrica L. Gale.—(Fig. MY, p. XXVII.)

Shrub; leaves simple, oval or lanceolate, slightly toothed, fragrant when bruised; flowers dioecious; 1-4 ft.
(Bog Myrtle.)

1. **M. Gale** L.

Sweet Gale.

Bogs: Apr.-May. P.

ALISMACEÆ. The species are all aquatic and are remarkable for the varied form of their leaves.

Flowers *monœcious*; *stamens many*;



leaves arrow-shaped S.

Flowers
perfect.
Stamens
6.

Carpels usually many, free, in a ring P, or head R.



Carpels 5-8, radiating D,



united at base.

Stamens 9; carpels 6, united at base.

I. Sagittaria L. Arrow-head.—(Fig. S, above.)

Leaves arrow-shaped and aerial, cordate and floating, ribbon-like and submerged; carpels many, free, in a head; flowers whorled, white, purple at centre; stem creeping, rooting, tuberous, length variable.

II. Alisma L. Water Plantain.—

Plant usually floating; stems submerged N; carpels 6-15;



leaves linear and ovate N; flowers white; length variable.

Plant rooted; carpels more than 15.



Carpels rounded, arranged in a ring P;



inflorescence of many whorls PL; flowers pale rose; leaves ovate and lanceolate; 8-40 in.

Carpels acute, arranged in a head R;



inflorescence an umbel or 2-whorled; flowers pale purple; leaves linear and lanceolate; 4-20 in.

III. Damasonium Hill. Damasonium.—(Fig. D, above.)

Stems usually spreading, rooting; leaves all radical, floating, 3 prominent veins; flowers white, whorled; 2-16 in. [Thrum-wort.]

IV. Butomus L. Flowering Rush.—(Fig. BU, p. XXXI.)

Stem creeping, rooting; leaves radical, long, narrow, 3-angled; flowers large, rose, umbellate; involucre 3-leaved; 2-4 ft.

I. Sagittaria L., p. 163.
Arrow-head.

II. Alisma L., p. 163.
Water Plantain.

III. Damasonium Hill, p. 163.
Damasonium.

IV. Butomus L., p. 163.
Flowering Rush.

1. S. sagittifolia L.
Common Arrow-head.
Ditches; rivers: July-Aug. P

1. A. natans L.
Floating Water Plantain.
VR.

Still waters: July-Aug. P.
2. A. Plantago L.¹
Common Water Plantain. C.
Margins of rivers and ponds: June-Aug. P.

3. A. ranunculoides L.
Lesser Water Plantain.
Ditches; marshes: June-Aug. P.

1. D. stellatum Rich.
Star Damasonium. R.
Ponds; ditches: June-Aug. P.

1. B. umbellatus L.
Flowering Rush.
Ditches; margins of rivers: June-July. P.

1. Var. *lanceolatum* Rchb.: leaves narrowed at base and apex.

LILIACEÆ.

Many species are cultivated as ornamental plants; others are edible, e.g. Asparagus, Onion.

Underground stem short, bulbous, or hard and thickened like a corm.

Stem bulbous at base, FL.

Perianth-segments free, or distinct E, N.







Flowers solitary or in racemes N.

Flowers ovoid, 6-toothed M;

Flowers in an umbel; bracts 1-2 SM, FL.

Flowers yellow, purple, or white and striated rose or purple.

Flowers white, greenish-white or blue.



Flowers solitary.

Style long ME.

Style very short; flowers yellow, erect.

Flowers racemose.

Perianth-segments spreading.

Perianth-segments reflexed.

Stamens attached above base of perianth E; flower bell-shaped N.

Stamens attached near base of perianth.

Filaments flattened; perianth white or greenish-white, persistent.

Filaments flattened or not; perianth blue or purplish, deciduous.

perianth-segments almost completely united, dark blue.

- I. *Muscari* Mill., p. 165. *Muscari*.
- II. *Allium* L., p. 166. *Allium*.
- III. *Tulipa* L., p. 167. *Tulip*.
- IV. *Lloydia* Salisb., p. 167. *Lloydia*.
- V. *Fritillaria* L., p. 167. *Fritillary*.
- VI. *Gagea* Sal., p. 167. *Gagea*.
- VII. *Lilium* L., p. 167. *Lily*.
- VIII. *Endymion* Dumort., p. 167. *Blue-bell*.
- X. *Ornithogalum* L., p. 168. *Ornithogalum*.
- IX. *Scilla* L., p. 167. *Squill*.
- XIII. *Colchicum* L., p. 168. *Colchicum*.

II. *Allium* L.¹ *Allium*.—

Leaves 1-2 in. broad U,
oval, acute;



stamens shorter than perianth; flowers
white; odour of garlic; 4-16 in.

Stamens
longer than
perianth C.

Leaves channelled at base; filaments not 3-cleft;
flowers rose; 8-24 in.



Leaves
more or
less flat.

Leaves not channelled at base; inner stamens 3-cleft flowers pale purple;
3½-4 ft.

Stamens
shorter than
perianth SC.

Stem rounded S; inner filaments 3-cleft; umbel
including bulbils; flowers purple; 2-3 ft.



Stem 3-angled; filaments not 3-cleft; umbel not including bulbils flowers
white; 8-16 in.

Bracts much longer than umbel O; umbel includ-
ing many bulbils O; flowers pinkish or
brownish, mixed with green; 16-30 in.

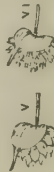


Leaves
rounded
or partly
rounded,
at least
at the
base.

Stamens shorter than perianth, not 3-cleft; umbel without bulbils; flowers
purplish or rose; 4-12 in.

Bracts shorter
or scarcely
longer than
umbel V, VI,
SM.

Stamens not much longer than
perianth; umbel with bulbils V;
bract not divided V, VI; flowers
pink; 16-36 in.



Stamens twice as long as perianth; umbel
without bulbils; bract simple or divided in
two SM; flowers red; 12-30 in.



1. *A. ursinum* L. ✠
Ramsons.
Damp shady places: Apr.-June.
P.

*2. *A. carinatum* L. Loc.
Dry places: July-Aug. F.

3. *A. Ampeloprasum* L.
Wild Leek. Loc.
Waste places: July-Aug. P

4. *A. Scorodoprasum* L.
Sand Garlic. Loc.
Sandy places: June-July. P.

* 5. *A. triquetrum* L.
Triquetrous Leek. Loc.
Moist shady places: Apr.-June. P.

6. *A. oleraceum* L.
Field Garlic. R.
Margins of fields: July-Aug. P.

7. *A. Schönoprasum*
L. ✠
Chives. R.
Rocky pastures: June-July. P.

8. *A. vineale* L.
Crow Garlic.
Dry fields: June-July. P.

9. *A. sphærocephalum*
L.
Round-headed Garlic. R.
Sandy places: June-July. P.

III. *Tulipa* L. *Tulip*.—

Leaves long, oval, pointed, glaucous; perianth bell-shaped T; segments hairy at apex; 1-1½ ft.

IV. *Lloydia* Salisb. *Lloydia*.—

Leaves very few, almost as long as flowering stem; bulb less than ½ in-in diameter; 2-5 in.

V. *Fritillaria* L. *Fritillary*.—(Fig. ME, p. 164.)

Leaves alternate, linear-lanceolate F, glaucous; 8-16 in.



(Snake's Head.)

VI. *Gagea* Salisb. *Gagea*.—

Leaf radical, usually solitary, narrow, longer than flowering stem S; bracts opposite; raceme flattened and resembling an umbel or a corymb; flowers yellow with green bands; 6-10 in.

VII. *Lilium* L. *Lily*.—

Lower leaves whorled; flowers distant from leaves, rose, spotted purple; style somewhat slender; 1 ½-4 ft. [Turk's-cap Lily.]

Lower leaves not whorled; flowers surrounded by leaves, yellow; style thick; 1 ½-2 ½ ft.

VIII. *Endymion* Dumort. *Wild Hyacinth*; *Blue-bell*.—(Figs. E, N, p. 164.)

Leaves all radical, numerous, narrow; flowers blue, fragrant; bracts often bluish, in pairs; 4-16 in.

IX. *Scilla* L. *Squill*.—

Leaves } Bracts absent; raceme not corymbose A; leaves much shorter
radical, } than flowering stem A; 4-9 in.

linear. } Bracts long, 1 below each flower; raceme flattened and corymbose; leaves almost as long as
flowering stem; 4-6 in.



1. The following species are often cultivated:—*A. sativum* L. \star [Garlic], leaves becoming recurved, flowers whitish; *A. Porrum* L. \star [Leek], leaves broad and glaucous, flowers whitish and striated red; *A. Cepa* L. \star [Onion], flowers greenish-white; *A. fistulosum* L. \star [Scallion or Green Onion], stem swollen towards middle; *A. ascalonicum* L. \star [Shallot], elongated bulb containing small purplish bulbils; *A. Schenoprasum* L. \star [Chives], flowers rose, without bulbils in umbel.

1. *T. sylvestris* L.

Wild Tulip. R.
Shady waste places: Apr.-May. P.

1. *L. serotina* Rehb.

Mountain Lloydia. VR.
Rocky mountains: June-July. P.

1. *F. Meleagris* L.

Common Fritillary. Loc.
Damp meadows: May-June. P.

1. *G. lutea* Ker.

Yellow Gagea. R.
Damp woods and meadows: Mar.-Apr. P.

1. *L. Martagon* L.

Martagon Lily. R.
Woods: June-July. P.

*2. *L. pyrenaicum* Gouan

Pyrenean Lily. VR.
Shady banks: June-July. P.

1. *E. nutans* Dumort.

Blue-bell. C.
Woods: Apr.-May. P.

1. *S. autumnalis* L.

Autumnal Squill. Loc.
Dry pastures: Aug.-Sept. P.

2. *S. verna* Huds.

Spring Squill. Loc.
Dry pastures: Apr.-May. P.

X. *Ornithogalum* L. *Ornithogalum*.—

Leaves *as long as or longer than* flowering stem; filaments trifid; raceme drooping; 8-18 in.

Raceme long PY. { Leaves *shorter than* flowering stem, often dying away before flowering period; filaments not cleft; raceme erect PY, branched; 2-3 ft. }



PY



Raceme flattened, corymbose U;

leaves about as long as flowering stem; 4-12 in.

XI. *Pubularia* Rafn. *Pubularia*.—

Roots thick, fleshy; leaves radical, grass-like; flowering stem branched; 6-18 in.

XII. *Narthecium* Huds. *Narthecium*.—(Fig. N, p. 165.)

Flowers in a raceme O; leaves narrow, long, smooth; underground stem scaly; 6-10 in.



U

XIII. *Colchicum* L. *Colchicum*.—(Fig. CO, p. XXXI.)

Leaves radical, appearing in spring and dying away before flowering period; flowers large, purplish or lilac; 6-12 in.

XIV. *Tofieldia* Huds. *Tofieldia*.—

Leaves radical, narrow, short; flowers in a dense, short spike; perianth persistent; 4-8 in.

XV. *Asparagus* L. *Asparagus*.—(Fig. AS, p. 165.)

Stems erect, much branched; flowers dioecious, greenish-yellow; berry small, red; 1-3 ft.

XVI. *Convallaria* L. *Convallaria*.—(Fig. C, p. 165.)

Leaves usually 2, oblong, radical; flowers fragrant, white; berry red; 6-12 in.

*1. *O. nutans* L.

Drooping Ornithogalum, R.
(Garden escape: Apr.-May. P.

2. *O. pyrenaicum* L.

Spiked Ornithogalum, Loc.
Woods: June. P.

3. *O. umbellatum* L.

Star of Bethlehem,
Fields; shady places: Apr.-
May. P.

1. *P. bicolor* Rafn.

Variiegated Pubularia, R.
Heaths: May-June. P.

1. *N. ossifragum* Huds.

Bog Asphodel,
Bogs: July-Aug. P.

1. *C. autumnale* L.

Meadow Saffron,
Meadows: Aug.-Oct. P.

1. *T. palustris* Huds.

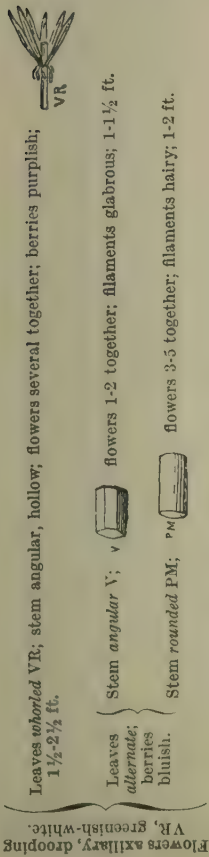
Scottish Asphodel,
Mountain bogs: July-Aug. P.

1. *A. officinalis* L.¹

Common Asparagus, R.
Sea coasts: June-July. P.

1. *C. majalis* L.

Lily of the Valley,
Woods: May. P.

XVII. *Polygonatum Hill. Solomon's Seal.*—(Fig. P, p. 165.)

1. *P. verticillatum* All.
Whorled Solomon's Seal.
VR.
Woods: May-June. P.

2. *P. officinale* All.
Angular Solomon's Seal.
R.
Woods: May-June. P.

3. *P. multiflorum* All.
Common Solomon's Seal.
Loc.
Woods: May-June. P

XVIII. *Maianthemum Wigg. May Lily.*—(Fig. M, p. 165.)

Underground stem creeping; leaves oval, cordate at base, stalked; flowers white; berries red; 4-8 in.

XIX. *Ruscus L. Ruscus.*—(Fig. R, p. 165.)

Shrub evergreen; leaves reduced to minute scales; branches flattened, green, leaf-like, spinous at apex; flower usually solitary, small, sessile, near middle of flattened branch, greenish; 1-3 ft.

XX. *Paris L. Herb Paris.*—(Fig. PA, p. 165.)

Leaves oval, sessile; flowers solitary, terminal, yellowish-green, styles 4; berry bluish-black; 8-12 in.

DIOSCOREACEÆ.

I. *Tamus L. Black Bryony.*—(Fig. TA, p. XXXII.)

Stem twining; leaves thin, shining, veins netted, apex pointed, base cordate; flowers yellowish-green, in axillary racemes; berries red; 3-12 ft.

1. *P. quadrifolia* L. ✠
Herb Paris. Loc.
Woods: May-June. P.

1. *T. communis* L.
Black Bryony.
Woods; hedges: May-June. P.

1. Var. *prostratus* Dumort.: stems 1-2 ft., prostrate; branches short, thick, hard; R.

IRIDACEÆ. Several species of Iris and Gladiolus are cultivated as ornamental plants. Flowers *irregular*, 2-lipped; stigmas 3.

Flowers <i>regular</i> ; stigmas 3.	Stigmas <i>petal-like</i> .	Upper and lower lips of each stigma deeply cleft; fruit 1-celled.	
		Upper lip only of each stigma deeply cleft, lower lip entire or notched; fruit 3-celled.	
Stigmas <i>not</i> <i>petal-like</i> .	Stigmas <i>not</i> entire; filaments free; flowers <i>solitary</i> .	Stigmas united below; flowers 1-6.	
		Stigmas bi-fid; perianth-tube <i>short</i> , above the soil.	
Stigmas <i>not</i> <i>petal-like</i> .	Stigmas <i>not</i> entire; filaments free; flowers <i>solitary</i> .	Stigmas <i>fringed</i> ; perianth-tube <i>long</i> , passing below the soil.	

I. *Gladiolus* L. *Gladiolus*.—

Leaves sword-shaped, spreading around stem; anthers shorter than filaments; capsule longer than broad; flowers rose or purplish; 1-2 ft.

II. *Hermodactylus* Adans. *Hermodactylus*.—

Flowers solitary, brown; outer perianth-segments reflexed at apex; stigmas greenish; root with several ova tubers; 8-16 in.

III. *Iris* L. *Iris*.—

Inner segments of perianth *p* much shorter than outer *c* and stigmas *s* (Fig. P); flowers yellow; flowering stem branched; 2-4 ft.

Inner segments of perianth *p* longer than *or* as long as outer *c* and stigmas *s* (Fig. P). Flowers bluish; flowering stem simple; 1-3 ft. (Gladdon.)

Outer segments yellowish-white, veined blue; inner segments violet; apex of capsule long, pointed; 1-3 ft.

IV. *Sisyrinchium* L. *Sisyrinchium*.—

Leaves radical, grass-like, shorter than flowering stem; flowers blue; capsule small, globular; 6-12 in.

V. *Romulea* Mar. *Romulea*.—

Inner segments of perianth slightly shorter than outer and with 3 principal veins a dark rose; stamens slightly longer than pistil; stigmas not cleft to their base; fruit-stalk curved; flowers purple, lilac or pale blue; leaves grass-like; 2-5 in.

Gladiolus L., p. 170.
Gladiolus.

II. *Hermodactylus* Adans., p. 170.
Hermodactylus.

III. *Iris* L., p. 170.
Iris.

IV. *Sisyrinchium* L., p. 170.
Sisyrinchium.

V. *Romulea* Mar., p. 170.
Romulea.

VI. *Crocus* L., p. 171.
Crocus.

1. *G. illyricus* Koch
Gladiolus. VR.

Damp woods; June-July. P.

*1. *H. tuberosus* Salisb. VR.
Hedges; June-July. P.

1. *I. Pseudacorus* L. ✕
Yellow Iris. C.

Wet places; June-July. P.

2. *I. fetidissima* L.
Fetid Iris.

Dry shady places; May-July. P.

*3. *I. spuria* L. VR.
Bastard Iris. VR.
Wet places; May-July. P.

1. *S. angustifolium* Mill.
Blue-eyed Grass. Loc.

Moist grassy or shady places; June-July. P.

1. *R. Columnæ* S. and M.
Romulea. Loc.

Heathy and sandy places near sea; Mar.-May P



VI. Crocus L. Crocus.—

Flowers without leaves at base, appearing in autumn, leaves finely and deeply fringed; flowers purple; 4-8 in.

Flowers with leaves at base; stigma coarsely fringed.

{ Stigmas about as long as perianth; flowers purple; 4-8 in.

{ Stigmas shorter than perianth; flowers violet and white, or white; 2-8 in.

AMARYLLIDACEÆ.

Most of the species are cultivated as ornamental plants.

Perianth not crowned, white.

{ Inner segments of perianth greenish, smaller than outer G; anthers pointed.

{ Segments of perianth all equal and similar (Figs. V, Æ, below); anthers not pointed.

Perianth crowned (Figs. P, PN, below), yellow or white.

I. Galanthus L. Snowdrop.—(Fig. G, above.)

Foliage leaves 2, linear, blunt, glaucous; flower solitary, drooping, outer segments rounded, inner notched; 8-12 in.

II. Narcissus L. Narcissus.—

Crown very short P. { Flowers usually solitary, white, crown yellow with red margin; 1-1½ ft.

{ Flowers 2-3, yellowish-white, crown yellow; 1-1½ ft.

Crown long PN; flowers solitary, yellow; 8-12 in

III. Leucojum L. Snowflake.—

Flowers 1-2 V; peduncle triangular; 8-16 in.

Flowers 4-6 Æ; peduncle flattened; 1-2 ft.

1. *I. germanica* L.: flowers purplish, inner segments of perianth bearing coloured hairs, 2-8 in., are often cultivated.

1. **C. nudiflorus** Sm.

Autumnal Crocus. R.

Meadows: Sept.-Oct. P.

2. **C. sativus** All. ✕

Saffron Crocus.

Cultivated: Sept.-Nov. P.

3. **C. vernus** All.

Spring Crocus. R.

Meadows: Mar.-Apr. P.

I. Galanthus L., p. 171.
Snowdrop.

III. Leucojum L., p. 171.
Snowflake.

II. Narcissus L., p. 171.
Narcissus.

1. **G. nivalis** L.
Snowdrop.
Woods; fields: Feb.-Mar. P.

*1. **N. poeticus** L.
Pheasant's-eye Narcissus. R
Fields: Apr.-May. P.

*2. **N. biflorus** Curt.
Jonquil. R.

Fields: Apr.-May. P.

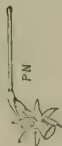
3. **N. Pseudo-narcissus** L.

Daffodil.

Woods: Mar.-Apr. P.

1. **L. vernum** L.
Spring Snowflake. R.
Woods; fields: Feb.-Apr. P.

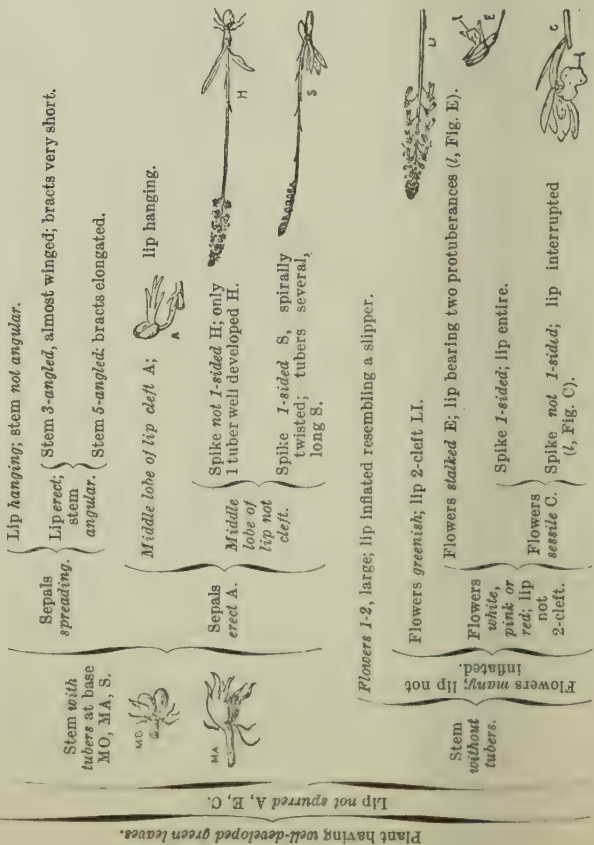
2. **L. æstivum** L.
Summer Snowflake. Loc.
Damp meadows: May-July. P.



[Loddon Lilly.]

ORCHIDACEÆ. Many exotic Orchids are cultivated in green-houses as ornamenta lplants.

Lip spurred (Figs. CO, PU, etc. pp. 174-5.)



V. *Orchis* L. p. 174.
Orchis.

I. *Ophrys* L., p. 173.
Ophrys.

II. *Liparis* Rich., p. 173.
Liparis.

III. *Malaxis* Sw., p. 173.
Bog Orchis.

IV. *Aceras* R. Br., p. 173.
Man Orchis.

VI. *Herminium* R. Br., p. 176.
Musk Orchis.

VII. *Spiranthes* Rich., p. 176.
Lady's Tresses.

VIII. *Cypripedium* L., p. 176.
Lady's Slipper.

IX. *Listera* R. Br., p. 176.
Tway-blade.

X. *Epipactis* Adans., p. 176.
Epipactis.

XI. *Goodyera* R. Br., p. 177.
Goodyera.

XII. *Cephalanthera* Rich., p. 177.
Helleborine.

Plant brownish; no green leaves. } Underground stem bearing many unbranched fibres or roots N; lip not spurred, 2-cleft.

Flowers small; lip usually not spurred. } Underground stem branched like coral CO; no true roots; lip not cleft.

Flowers rather large; lip spurred.

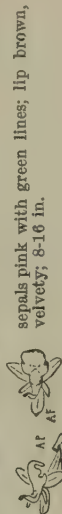
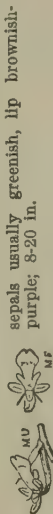
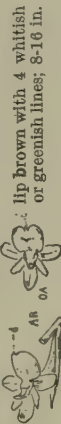
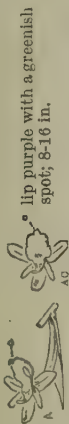
I. *Ophrys* L. *Ophrys*.—

Lip scarcely lobed AC, OA. } Lip with a yellow terminal appendage curved inwards (a, Figs. A, AC);

Lip entire or with a small tooth (d, Figs. AR, OA);

Middle lobe of lip bi-fid at apex MU, MF;

Middle lobe of lip 3-lobed AF, lobes recurved AP;



1. *O. arachnites* Hoffm. *Late Spider Orchis*. VR. Shady hilly pastures: May-June. P.

2. *O. aranifera* Huds. *Spider Orchis*. R. Shady hilly pastures: Apr.-May. P.

3. *O. muscifera* Huds. *Fly Orchis*. LOC. Shady hilly pastures: May-June. P.

4. *O. apifera* Huds. *Bee Orchis*. LOC. Shady hilly places: June-July. P.

1. *L. Læselii* Rich. *Two-leaved Liparis*. VR. Bogs: June-July. P.

1. *M. paludosa* Sw. *Bog Orchis*. R. Spongy bogs: July-Sept. P.

1. *A. anthropophora* R. Br. *Man Orchis*. LOC. Shady pastures: June. P.

II. *Liparis* Rich. *Liparis*.—
Leaves 2, oblong, keeled, yellowish-green; spike 3-10 flowered; flowers greenish-yellow; 4-8 in. [Fen Orchis.]

III. *Malaxis* Sw. *Bog Orchis*.—
Stem 5-angled; leaves 2-5, fringed with small bulbils; flowers yellowish-green, small, many, in long spike; 2-4 in.

IV. *Aceras* R. Br. *Man Orchis*.—(Fig. A, p. 173.)
Flowers greenish-yellow with brown rays; lip longer than ovary, lobes narrow; 8-16 in.

Spur (e) twice as long as ovary (o, Fig. CO);



bracts 3-nerved; leaves narrow, 4-8 in. long; flowers rose, fragrant; spike 3-5 in. long; 1-2 ft.

Spur shorter than or as long as ovary.

Tubers lobed MA.



Flowers greenish; spur (e) 2-5 times shorter than ovary (o, Fig. V).

Lip longer than the other petals, 3-lobed, lobes narrow V; flowers yellowish-green; 4-8 in.



Lip about as long as the other petals, 3-lobed, lobes broad A; flowers greenish-white, fragrant; 4-8 in.



Flowers purple or purplish; spur fairly long.

Bract (b, Fig. LA) longer than flower; flowers purple; 1-2½ ft.



Bract (o, Fig. MC) shorter than flower; flowers rose or whitish, streaked purple; leaves spotted purple; 1-2 ft.



Bract (b, Fig. PU) at least 3 times shorter than ovary o.

Bract 6-8 times shorter than ovary PU; middle lobe of lip broad P;



flowers dark purple, lip variegated; 1-2½ ft.

6. O. purpurea Huds. Purple Orchis. R. Woods; May-June. P.

Bract 3-4 times shorter than ovary; flowers rose, purplish or ash-coloured.

Middle lobe of lip narrow S; 1-2 ft.



7. O. Simia Lam. Monkey Orchis. R. Woods; May-June. P.

Middle lobe of lip broad MI; 1-2 ft.



8. O. militaris L.³ Military Orchis. R. Woods; May-June. P.



9. *O. bifolia* L.
Small Butterfly Orchis.
Pastures; woods: June-July. P.
10. *O. montana* Schmidt.
Large Butterfly Orchis.
Pastures; woods: May-June. P.
11. *O. pyramidalis* L.
Pyramidal Orchis.
Hilly pastures: June-Aug. P.
12. *O. Morio* L.
Green-winged Orchis.
Pastures: May-June. P.
13. *O. laxiflora* Lam.
Loose-flowered Orchis. R.
Moist places: May-June. P.
14. *O. mascula* L.
Early Purple Orchis.
Moist shady places: Apr.-June. P.
15. *O. ustulata* L.
Burned Orchis.
Pastures: May-June. P.
16. *O. hircinia* Cr.
Lizard Orchis. VR.
Pastures: June-July. P.
- Bract almost as long as or longer than ovary.
- Lip narrow, entire BI, spur narrow B, BI; flowers fragrant, white; 8-20 in.
- Anther-lobes parallel (a, Fig. BI); spur narrow B, BI; flowers fragrant, white; 8-20 in.
- Lip entire or lobed; lobes not entire MO.
- Tubers entire MO.
- Middle lobe of lip entire or almost so MR.
- Upper bracts 1-nerved M; flowers purple, green-veined;
- Upper bracts 3-nerved LX; flowers red;
- Spur (e, Fig. MS) almost as long as ovary; flowers rose-purple, rarely white; 1-2 ft.
- Spur (e, Fig. U) about $\frac{1}{2}$ length of ovary; flowers purple, lip white, spotted purple; 6-8 in.
- Lip not bearing protuberances.
- Lip broad, lobed C, MS.
- Lip bearing 2 small protuberances above PY; spur long; flowers bright rose; 1-1 $\frac{1}{2}$ ft.
- Middle lobe of lip notched at apex MS, U.
- Lip lobed; lobes long and twisted LO; spur short; flowers greenish-white, spotted purple, odour fetid; tubers entire; 1 $\frac{1}{2}$ -3 ft.

1. Be careful not to mistake the long and often twisted ovary at the base of the flower for the flower-stalk; the ovules can be easily seen when the ovary is cut across or lengthwise.—2. Var. *incarnata* L.: leaves light green, not spotted, bracts all longer than flowers, R.—8. Many hybrids have characters intermediate between those of this and the two preceding species.

VI. *Heiminium* R. Br. *Musk Orchis*.—(Fig. H, p. 172.)

Leaves usually 2; flowers greenish-yellow; lip erect, 3-lobed, lobes narrow; 4-8 in.

VII. *Spiranthes* Rich. *Lady's Tresses*.—

Flowers white;	{	Spike lax A; flowers in one row, fragrant; 4-12 in.	
leaves long, narrow		Spike dense, shorter; flowers in three rows; 6-10 in.	
A. S.	{	Leaves all round base of stem A.	
		Leaves in a lateral rosette at base of stem S; flowers in one row, fragrant with a vanilla-like smell; 4-10 in.	



VIII. *Cypripedium* L. *Lady's Slipper*.—

Stem leafy; leaves ovate, pointed, 1½-3 in. broad; sepals and petals 1-2 in. long, brown; lip yellow, variegated purple; 1-1½ ft.

IX. *Listera* R. Br. *Tway-blade*.—

Leaves 2, large, cauline; lip hanging.	{	Leaves ovate; spike long (Fig. LI, p. 172); lip not toothed at base; 1-1½ ft.
		Leaves cordate; spike short; lip with 2 lateral teeth at base; 4-8 in.

X. *Epipactis* Adans. *Epipactis*.—

Lip shorter than sepals (I, Fig. E.)		lower leaves ovate, broad; 1-3 ft.
Lip as long as, or longer than sepals (I, Fig. PA);		

1. *H. Monorchis* R.Br.
Musk Orchis. Loc.
Hilly pastures: June-July. P.

1. *H. æstivalis* Rich.
Summer Lady's Tresses. R.
Bogs; marshes: July-Aug. P.

2. *H. Romanzoffiana*
Cham.

Irish Lady's Tresses. VR.
Boggy places: Aug.-Sept. P.

3. *H. autumnalis* Rich.
Common Lady's Tresses.
Dry hilly pastures: Aug.-Oct.
P.

1. *C. Calceolus* L.
Lady's Slipper. VR.
Woods: May-July. P.

1. *L. ovata* R.Br.
Common Tway-blade. P.
Moist woods: May-June.

2. *L. cordata* R.Br.
Lesser Tway-blade.
Turfy moors: June-Aug. P.

1. *E. latifolia* All. ♂
Broad-leaved Epipactis.
Shady hilly places: July-Sept.
P.

2. *E. palustris* Cr.
Marsh Epipactis.
Marshy places: July-Aug. P.

Goodyera R.Br. *Goodyera*.—

Leaves ovate, spreading; bracts narrow, adpressed; flowers small, white, almost odourless; 2-12 in.

1. **G. repens** R.Br.
Creeping Goodyera. R.
Rocky woods: July-Sept. P.

XII. Cephalanthera Rich. *Helleborine*.—

Bract (b, Fig. EN) much shorter than ovary;



leaves narrow, long E; sepals acute EN; flowers white; 1-2 ft.



Bract (b, Fig. R) about as long as ovary.

Ovary glabrous; sepals rounded; flowers white; leaves oval or oblong G; 1-1½ ft.



Ovary hairy R; sepals pointed R; flowers rose; leaves narrow; 1-2 ft.



1. **C. ensifolia** Rich.
Narrow-leaved Helleborine. R.
Woods: May-June. P.

2. **C. grandiflora** Bab.
Large-flowered Helleborine.
Woods: May-June. P.
3. **C. rubra** Rich.
Red Helleborine. VR.
Woods: June-July. P.

XIII. Neottia Adans. *Bird's-nest Orchis*.—(Fig. N, p. 173.)

Leaves reduced to brown scales; bracts brownish-white; flowers reddish; roots many; plant living on leaf-debris; 1-1½ ft.

1. **N. Nidus-avis** Rich.
Bird's-nest Orchis.
Woods: May-June. P.

XIV. Corallorhiza Hall. *Coral-root Orchis*.—(Fig. CO, p. 173.)

Leaves reduced to sheaths, pale brown; flowers 3-12, drooping, white or greenish; spike lax; plant living on decaying leaves; 4-12 in.

1. **C. innata** R.Br.
Coral-root Orchis. R.
Boggy woods: June-Aug. P.

XV. Epipogium Sw. *Epipogium*.—

Stem sheathed; raceme 1-8 flowered; flowers yellowish, lip whitish marked purple; plant living on decaying leaves; 4-8 in.

1. **E. aphyllum** Sw.
Leafless Epipogium. VR.
Woods: July-Aug. P.

HYDROCHARIDACEÆ.

All the species are aquatic. *Elodea* is a N. American plant which has spread with great rapidity in the rivers and of Europe.

Leaves rounded, cordate, stalked H;



staminate flowers in groups of 3, stamens 12, pistillate flowers solitary.

I. **Hydrocharis** L., p. 178.
Frog-bit.

Leaves more or less elongated, sessile E, S.

Leaves usually in whorls of 3 along the stem E, transparent; pistillate flowers solitary, tube long.



II. **Elodea** Michx., p. 178.
Elodea.

Leaves all radical S, rigid, thick, acute, erect S; stamens many.



III. **Stratiotes** L., p. 178.
Water Soldier.

I. **Hydrocharis** L. *Frog-bit.*—(Fig. H, above.)

Plant usually floating; stipules numerous; petals white, yellow at base.

1. **H. Morsus-ranæ** L.
Frog-bit.
Still water July-Aug. P.

II. **Elodea** Michx. *Elodea.*—(Fig. E, above.)

Plant submerged, floating; leaves finely toothed; flowers pinkish-white.

*1. **E. canadensis** Rich.
Water Thyme.
Still water: July-Sept. P.

American Water-weed.]

III. **Stratiotes** L. *Water Soldier.*—(Fig. S, above.)

Plant creeping in mud; leaves sword-shaped, erect, sharply toothed, thick, rigid, acute; flowers white; 1-2 ft.

1. **S. aloides** L.
Water Soldier. Loc. P.
Still water: July-Aug.

NAIADACEÆ.

Leaves rush-like, not submerged or floating; perianth segments 6.

Leaves all radical; raceme long.

Leaves alternate on stem; raceme short.

I. **Triglochin** L., p. 179.
Arrow-grass.

II. **Scheuchzeria** L., p. 179.
Scheuchzeria.

Perianth-segments and stamens 4; flowers in spikes or heads above water, perfect.

Fresh-water submerged or floating; perianth-segments less than 6.

Perianth 0 or tubular; flowers solitary, axillary NM; imperfect.

Leaves fine, long Z; style 1.

Leaves broader, toothed NM; styles 2-3 NM.

Salt-water plants.

Leaves very narrow or filiform R; flowers perfect; carpels 4; fruits on long stalks R.

Leaves linear, long, grass-like; flowers imperfect; carpel 1.

I. *Triglochin* L. *Arrow-grass*.—

Fruit long P, 3-carpelled;



Fruit oval M, 6-carpelled;



II. *Scheuchzeria* L. *Scheuchzeria*.—

Peduncle few-flowered; pedicels of unequal length; flowers yellowish-green; 4-8 in.

III. *Potamogeton* L. *Pondw.*—

Several of the species are difficult to determine, and it is sometimes necessary to gather the specimens when their fruits are nearly or quite ripe.

Peduncle (p, Fig. G) thicker than stem t, often swelling upwards.

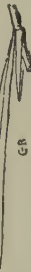


Lower leaves shortly stalked L, submerged.

Peduncle much thicker than stem; leaves gradually pointed at apex GR, submerged, upper ones floating or not developed.

Lower leaves sessile GR, M.

Peduncle only slightly, if any, thicker than stem; leaves abruptly pointed at apex M, 5-nerved, submerged.



III. *Potamogeton* L., p. 179. *Pondweed*.

IV. *Zannichellia* L., p. 181. *Horned Pondweed*.

V. *Naia* L., p. 181. *Naia*.

VI. *Ruppia* L., p. 181. *Ruppia*.

VII. *Zostera* L., p. 181. *Grass-wrack*.

1. *T. palustre* L. *Marsh Arrow-grass*. O. Marshes: June-Aug. P.

2. *T. maritimum* L. *Sea Arrow-grass*. C. Salt marshes: June-Sept. P.

1. *S. palustris* L. *Marsh Scheuchzeria*. VR. Bogs: June-July. P.


1. *P. lucens* L. *Shining Pondweed*. Rivers: June-July. P.

2. *P. gramineus* L. *Grass-leaved Pondweed*. P. Ponds; ditches: June-July. P.

3. *P. mucronatus* Schrad. *Mucronate Pondweed*. Ditches: June-Aug. P.

Peduncle not thicker than stem. (See next page.)

Continuation of key of genus *Potamogeton*.

Leaves coarsely
waved and crisped
at margin CR;  CA

Leaves
linear,
2-4 in. long,
less than
 $\frac{1}{2}$ in.
broad,
submerged.

Leaves grass-like, sheathing stem; stems thread-
like PC.

Leaves not or
only slightly
sheathing
stem; stems
compressed.

fruit with a recurved beak, half its own length; leaves sub-
merged.



Stems winged, resembling the leaves.
Stem not winged.

Leaves 5-nerved.

Upper leaves
petiolate R;



(See *P. mucronatus*.)
lower leaves submerged,
upper ones floating.

Leaves,
or at
least lower
ones,
sessile.

Leaves all
sessile,
amplexicaul
PE,
submerged.



Leaves cordate at base PE;
fruit not keeled.



Leaves not cordate at
base P; fruit acute-
ly keeled PP.

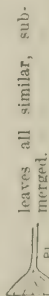
Leaves
much broader
than
 $\frac{1}{2}$ in.

Spike more than 10-flowered.

Leaves not coarsely waved and crisped at margin

Peduncle of spike not thicker than stem.

Leaf-blade not folded
at base PL;



leaves all similar, sub-
merged.

Leaf-blade
with 2 folds
at base N;



lower
leaves
linear and
sub-
merged,
upper
broad and
floating.

Fruit about $\frac{1}{2}$ in. long NA;
spike of fruits thick, seve-
ral fruits often aborted; NA
lower leaves not persistent
after flowers.

Fruit about $\frac{1}{12}$ in. long
PO; spike of fruits slender,
compact; lower leaves per-
sistent after flowers.

4. *P. crispus* L.
Curly Pondweed. C.
Streams, ditches; June-Aug. P.

5. *P. pectinatus* L.
Fennel Pondweed.
Streams; ponds; July-Aug. P.

6. *P. compressus* L.
Compressed Pondweed.
Streams; June-Aug. P.

7. *P. obtusifolius* M. & K.
Obtuse-leaved Pondweed.
Ponds; ditches; July-Aug. P.

8. *P. rufescens* Schrad.
Reddish Pondweed.
Ditches; streams; June-Aug. P.

9. *P. perfoliatus* L.
Perfoliate Pondweed.
Rivers; ponds; June-Aug. P.

10. *P. prælongus* Wulf.
Long Pondweed.
Rivers; ponds; June-July. P.

11. *P. plantagineus*
Ducros.
Plantain-leaved Pondweed.
Stagnant peaty water; June-
Aug. P.

12. *P. natans* L.¹
Broad-leaved Pondweed.
VC.
Streams; ponds; ditches;
June-Aug. P.

13. *P. polygonifolius*
Pourr.
*Polygonum-leaved Pond-
weed.*
Streams; ponds ditches
June-Aug. P.

Stem compressed C; spikes erect; leaves linear, acute C, 1/2 amplexicaul, 3-veined, 2-3 in. long.



Spike 4-10 flowered, leaves submerged.

Stem not thread-like D; peduncle recurved D; leaves oval, acute, opposite D.



Stem not compressed.

Stem thread-like; peduncle straight; leaves linear, very fine PU.
 Leaves usually 3-veined; fruit bluntly keeled.
 Leaves usually 1-veined, bristle-like; fruit half rounded.



IV. *Zannichellia* L. *Horned Pondweed*.—(Fig. Z, p. 179.)
 Plant submerged; stems and leaves filiform; flowers monœcious; fruit with a long beak.

V. *Najas* L. *Naiad*.—

Leaves linear, sheathing at base.

Sheath entire or nearly so; leaves strongly spinous; flowers diœcious; anther 4-celled.

Sheath toothed; flowers monœcious.

Leaves very narrow, finely toothed; sheaths ciliate; anther 1-celled.

Leaves narrow, finely and sharply toothed; sheaths lobed at base; anther 4-celled.

VI. *Ruppia* L. *Ruppia*.—(Fig. R, p. 179.)

Leaves sheathing at base.

Sheath inflated; fruiting peduncle very long, spirally coiled.

Sheath not inflated; fruiting peduncle shorter, not longer than 1 1/2 in., flexuous; fruit with elongated beak; plant very slender.

VII. *Zostera* L. *Grass-wrack*.—

Leaves 2-8 mm. broad M, 1-3 ft. long, 1-7 veined;



seeds furrowed.

Leaves 1-2 mm. broad N, 3-8 in. long, 1-3 veined;



seeds smooth.

14. *P. acutifolius* Link
Acute-leaved Pondweed.
 Ditches; ponds; June-Aug. P.

15. *P. densus* L.
Opposite-leaved Pondweed.
 Streams; ponds; July-Sept. P.

16. *P. pusillus* L.
Slender Pondweed.
 Ponds; ditches; June-Aug. P.

17. *P. trichoides* Cham.
 & Schlecht.
Hair-like Pondweed. R.
 Ditches; July-Aug. P.

1. *Z. palustris* L.
Common Horned Pondweed.
 Ponds; streams May-Aug. A. or F.

1. *N. marina* L.
Holly-leaved Naiad. VR.
 Broad; July-Aug. P.

2. *N. flexilis* Rosk.
Slender Naiad. Loc.
 Lakes; Aug.-Sept. P.

*3. *N. graminea* Delle
Grassy Naiad. R.
 Stagnant water; July-Sept. A.

1. *R. maritima* L.
Tassel Pondweed.
 Salt marshes; creeks; July-Oct. P.

2. *R. rostellata* Koch
Slender Tassel Pondweed.
 Salt marshes; creeks; July-Oct. P.

1. *Z. marina* L. H
Long-leaved Grass-wrack. C.
 Salt water; June-Aug. P.

2. *Z. nana* Roth.
Dwarf Grass-wrack. Loc.
 Salt water; June-Aug. P.

1. Var. *fluitans* Roth: floating leaves long, narrowed at base and apex.

ERIOCAULACEÆ.

I. Eriocaulon L. Eriocaulon.—

Stem slender, creeping; leaves tufted, linear, nearly transparent; flowers membranous, small; 4-24 in. (Pipe-wort).

LEMNACEÆ.

I. Lemna L. Duckweed.—These tiny plants often completely cover the surfaces of ponds and ditches.

Fronds arranged cross-wise, 3 or 2, narrow at apex T; plant often submerged; flowers rarely.



Roots many on under surface of each frond P;



plant reddish or purplish below.

Fronds not arranged cross-wise, rounded at apex; plants floating on surface.

Roots solitary on under surface of each frond M, G.

Fronds almost flat below M.



Fronds spongy and rounded below G; flowers rarely.

Fronds rootless, very small, swollen below A.



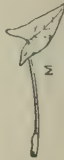
ARACEÆ.

Though represented in the British flora by only three species, this N.O. includes many plants growing in tropical regions.

Plant more than 2 feet in height; perianth-segments 6; flowers perfect; leaves and bract long and narrow.



Plant less than 1½ feet in height; perianth. segments 0; flowers monocious; leaves hastate M; bract broad (Fig. AR, p. XXIX.)



Acorus L. Acorus.—

Leaves erect, ½-¾ in. broad, 2-3 ft. long, apex acute (Fig. A, above); spike dense C, yellowish-brown; plant fragrant when bruised.



[Sweet Sedge.]

1. E. septangulare L.
Jointed Eriocaulon. R.
Shallow lakes: July-Aug. P.

1. L. trisulca L.
 Ivy-leaved Duckweed.
Still waters: June. A.

2. L. polyrrhiza L.
 Greater Duckweed.
Still waters: not flowering in Britain. A.

3. L. minor L.
 Lesser Duckweed. C.
Still waters: June-July. A.

4. L. gibba L.
 Gibbous Duckweed.
Still waters: June-Aug. A.

5. L. arrhiza L.
 Rootless Duckweed. R.
Still waters: not flowering in Britain. A.

I. Acorus L., p. 182.
Acorus.

II. Arum L., p. 183.
Arum.

1. A. Calamus L. ✕
Sweet Flag. Loc.
Margins of lakes and streams: June-July. P.

II. *Arum* L. *Arum*.—(Fig. M, above; Fig. AR, p. XXIX.)

- Underground stem
tuberous;
ber-
ries bright red.
- Leaves usually spotted purple, appearing in spring and disappearing before fruits are ripe; *inflorescence axis purple in upper part*, half length of bract; $\frac{1}{2}$ -1½ ft.
[Cuckoo-plnt; Wake Robin; Lords and Ladies.]
- Leaves sometimes spotted rose, appearing before winter; *inflorescence axis yellow in upper part*, one-third length of bract; 1-2 ft.

1. *A. maculatum* L. ✠
Common Arum. C.
Hedges; thickets: Apr.-May. P.
2. *A. italicum* Mill.
Italian Arum. LOC.
Hedges; thickets: Apr.-May. P.

TYPHACEÆ.

The Reed-mace and Bur-reed, often wrongly called Rushes, are used as litter and also for thatching roofs.

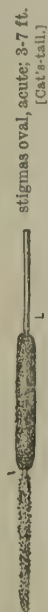
Flowers in long, dense, cylindrical spikes (Figs. L, A, below).

Flowers in globose heads (Figs. R, S, N, below).

I. *Typha* L. *Reed-mace*.—

Staminate flowers scarcely separated from pistillate (i, Fig. L);

Staminate flowers distinctly separated from pistillate (i, Fig. A);



stigmas oval, acute; 3-7 ft.
[Cat's-tail.]



stigmas very narrow; 3-6 ft.

II. *Sparganium* L. *Bur-reed*.—

Heads several on each branch of inflorescence R; leaves 3-sided, at least at their base; 2-3½ ft.



Lower leaves 3-sided at base; heads usually many S; plant not submerged; 1-3 ft.



Heads solitary on each branch of inflorescence S, N.

Lower leaves 2-sided at base; heads few N; plant usually submerged, floating; length variable.



Fruit sessile, beak very short.
Fruit stalked with beak about half its own length.

1. *S. ramosum* Huds. ✠
Branched Bur-reed. C.
Margins of water; June-Aug. P.

2. *S. simplex* Huds.
Unbranched Bur-reed.
Margins of water; June-Aug. P.
3. *S. minimum* Fr.
Small Bur-reed.
Lakes; ditches; rivers: July-Aug. P.

4. *S. affine* Schnizl.
Slender Bur-reed. R.
Lakes: July-Aug. P.

JUNCACEÆ. The species of the genus *Juncus* are difficult to determine.

Leaves *glabrous, long and cylindrical, or reduced to scales; fruit 3-chambered.*

Leaves *hairy, flat LC;*



fruit 1-chambered.

I. Juncus L. Rush.

Flowering stems *filiform, less than 1 mm. in diameter* F, striate; flowers few F, pale brown, perianth-segments acute; 4-8 in.

Stems *pliable*; pith continuous EF; scales not shining; stamens 3.



Inflorescence *globose, dense* E, brown; 1½-3 ft. [Common Rush.]

Inflorescence *lax, spreading*, paler; 1½-3 ft. [Common Rush.]



[Common Rush.]

Flowering stems not *filiform, more than 1 mm. in diameter.*

Stems *rigid*; stamens 6. Stem with an *interrupted pith* (cf., glaucous; Stem with a *continuous pith*, not glaucous; inflorescence denser; underground stem creeping; 1-2 ft.



scales shining; inflorescence not dense G; 1-3 ft. G



Flowers in *round-clusters or heads* C.

Perianth-segments *acute*, apex recurved, twice as long as fruit; 2-4 in.



Perianth-segments *round*; leaves *bi-tubular* within; bracts shorter than inflorescence; flowers usually 3 in cluster; 3-10 in. Stem *channelled*; leaves *septate* within; bracts slightly longer than inflorescence; flowers 2 in cluster; 2-6 in.

Leaves long, all *radical* C.

Leaves about 1½-½ in. broad, few, sharp at apex; underground stem long, creeping.

Inflorescence *lax*; fruit as long as perianth; 2-3 ft.

Flowers not in heads S.

Inflorescence *dense*; fruit larger, twice as long as perianth; 2-4 ft.

Inflorescence *dense*; fruit larger, twice as long as perianth; 2-4 ft.

Leaves about 1½ in. broad, numerous, tufted, not sharp at apex; underground stem short; 8-12 in.



I. Juncus L., p. 184.

Rush.

II. Luzula DC., p. 186.

Wood Rush.

1. J. filiformis L.

Slender Rush. VR.

Margins of lakes: July-Aug. P.

2. J. conglomeratus L.

Dense-flowered Rush. C.

Wet places: June-Aug. P.

3. J. effusus L. H.

Lax-flowered Rush. C.

Wet places: June-Aug. P.

4. J. glaucus Ehrh. H.

Hard Rush.

Wet places: June-Aug. P.

5. J. balticus Willd.

Baltic Rush. Loc.

Sea coasts: June-Aug. P.

6. J. capitatus Weig. R.

Damp sandy and heathy places: June-July. A.

7. J. triglumis L.

Three-flowered Rush.

Mountain bogs: Aug.-Sept. P.

8. J. biglumis L.

Two-flowered Rush. R.

Mountain bogs: Aug.-Sept. P.

9. J. maritimus Lam.

Sea Rush.

Salt marshes: July-Aug. P.

10. J. acutus L.

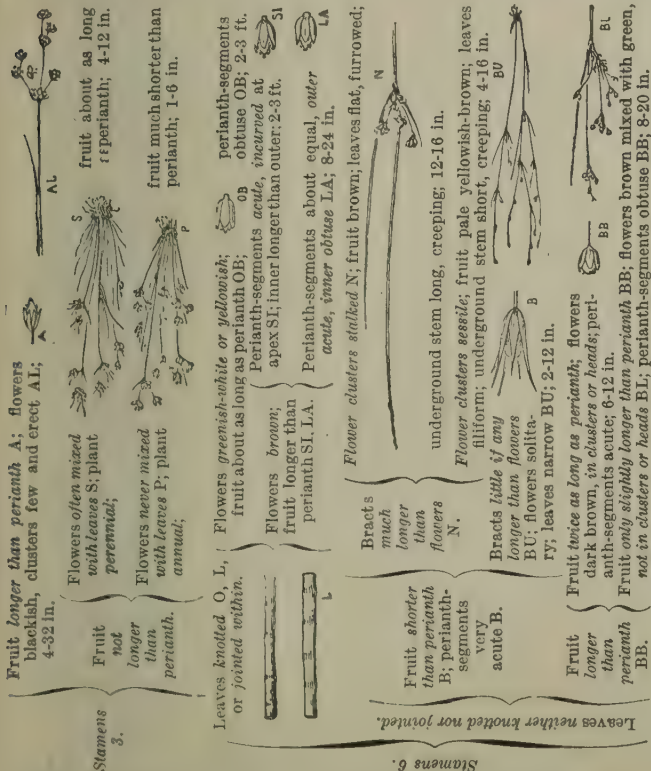
Sharp Sea Rush. R.

Sandy coasts: June-July. P.

11. J. squarrosus L.

Heath Rush. C.

Damp sandy and heathy places: June-July. P.



Fruit longer than perianth A; flowers blackish, clusters few and erect AL; 4-32 in.

Flowers often mixed with leaves S; plant perennial;

Fruit not longer than perianth.

Stamens 3.

Leaves knotted O, L, or jointed within.



Flowers greenish-white or yellowish; fruit about as long as perianth OB;

Flowers brown; fruit longer than perianth SI, LA.

perianth-segments obtuse OB; 2-3 ft.

Perianth-segments acute, incurved at apex SI; inner longer than outer; 2-3 ft.

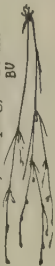
Perianth-segments about equal, outer acute, inner obtuse LA; 8-24 in.

Flower clusters stalked N; fruit brown; leaves flat, furrowed;



underground stem long, creeping; 12-16 in.

Flower clusters sessile; fruit pale yellowish-brown; leaves filiform; underground stem short, creeping; 4-16 in.



Bracts little if any longer than flowers BU; flowers solitary; leaves narrow BU; 2-12 in.

Fruit twice as long as perianth; flowers dark brown, in clusters or heads; perianth-segments acute; 6-12 in.

Fruit only slightly longer than perianth BB; flowers brown mixed with green, not in clusters or heads BL; perianth-segments obtuse BB; 8-20 in.



12. *J. alpinus* Vill.

Alpine Rush. R. Mountain bogs: July-Aug. P.

13. *J. supinus* Mönch

Procumbent Rush. Damp places; sand; June-Aug. P.

14. *J. pygmaeus* Thuill.

Dwarf Rush. Loc. Damp places: June-Aug. A.

15. *J. obtusiflorus* Ehrh.

Obtuse-flowered Rush. Marshy places; sand; June-Aug. P.

16. *J. sylvaticus* Reich.

Wood Rush. C. Damp shady places; June-Aug. P.

17. *J. lamprocarpus* Ehrh.

Shining-fruited Rush. C. Damp places: June-Aug. P.

*18. *J. tenuis* Willd.

Slender Rush. R. Damp woods and roadsides: July-Aug. P

19. *J. trifidus* L.

Three-leaved Rush. Loc. Damp rocky places: Aug.-Sept. P.

20. *J. bufonius* L.¹

Toad Rush. C. Damp places; sand; June-Aug. A.

21. *J. castaneus* Sm.

Chestnut Rush. R. Damp rocky places; July-Aug. P.

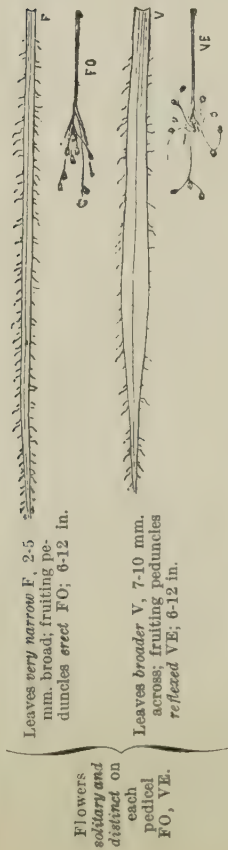
22. *J. bulbosus* L.

Round-fruited Rush. Wet places: June-Aug. P.

One or several leaves cauline, long AL, BU.

Leaves green, not reduced to scales.

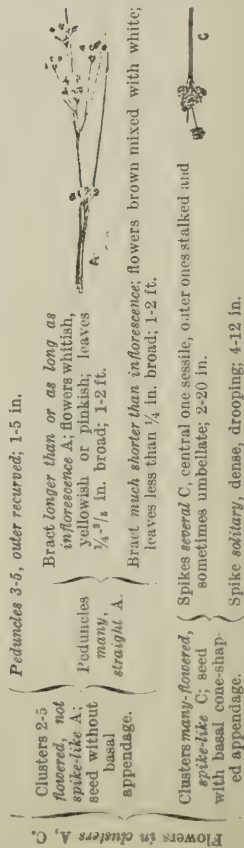
1. Var. *fasciculatus* Bert.: stem shorter, flowers 2-3 together.

II. *Luzula* DC. *Wood Rush*.—

Leaves *very narrow* F, 2-5 mm. broad; fruiting peduncles *erect* FO; 6-12 in.

Leaves *broad* V, 7-10 mm. across; fruiting peduncles *reflexed* VE; 6-12 in.

Flowers *solitary and distinct* on each pedicel FO, VE.



Clusters 2-5 *flowered, not spike-like* A; seed without basal appendage.

Clusters *many-flowered, spike-like* C; seed with basal cone-shaped appendage.

Peduncles 3-5, *outer recurved*; 1-5 in.

Bract *longer than or as long as inflorescence* A; flowers whitish, yellowish or pinkish; leaves $\frac{1}{4}$ to $\frac{3}{8}$ in. broad; 1-2 ft.

Bract *much shorter than inflorescence*; flowers brown mixed with white; leaves less than $\frac{1}{4}$ in. broad; 1-2 ft.

Spikes *several* C, central one sessile, outer ones stalked and sometimes umbellate; 2-20 in.

Spike *solitary*, dense, drooping; 4-12 in.

CYPERACEÆ.

The members of this N.O. often resemble the Grasses but they have solid and usually triangular stems, grow in damp places and do not make good hay.

Flowers *monœcious*, rarely diœcious.

{ Ovary and fruit *completely enclosed* in bottle-shaped perianth, style protruding at apex.

{ Ovary and fruit *not completely enclosed* in perianth, latter open at side.

1. *L. Forsteri* DC.
Forster's Wood Rush. Loc.
Woods; pastures; Apr.-May. P.

2. *L. vernalis* DC.
Hairy Wood Rush.
Woods; pastures; Mar.-Apr. P.

3. *L. arcuata* Sw.

Curved Wood Rush.
High mountains; June-July. P.

4. *L. albida* DC.

White Wood Rush. R.
Woods; pastures; June-July. P.

5. *L. maxima* DC.

Great Hairy Wood Rush.
Woods; May-June. P.

6. *L. campestris* DC.
Field Wood Rush. C.
Dry pastures; heaths; Mar.-
June. P.

7. *L. spicata* DC.

Spiked Wood Rush.
Mountains; June-Aug. P.

VIII. *Carex* L., p. 191.
Carex.

VII. *Kobresia* Willd.,
p. 191.
Kobresia.

Fruit surrounded by very long white hairs A;



spikelets usually many-flowered, bearing small white tufts as fruits ripen hyphen.

V. *Eriophorum* L., p. 190.
Cotton-grass.

Fruit without hairs at its base, with or without bristles no longer than the scales.

Spikelets either not compressed, or flowers not in 2 opposite rows.

Lower scales of each spikelet smaller than the others.

Plant seldom more than 2 ft. high; leaves 1-3 mm. broad.

Leaves stiff, prickly NI; bracts broad at base C; style not persistent.

Leaves not prickly R; bracts narrow; style persistent (Figs. RA, F, below).

Plant at least 3 ft. high; leaves with sharp cutting teeth along margins and middle M, 5-9 mm. broad; spikelets numerous, many-flowered CM.



Spikelets compressed FL and flowers in 2 opposite rows FL.

Lower scales of each spikelet equal to or larger than the others.

III. *Cyperus* L., p. 190.
Cyperus.

II. *Scirpus* L., p. 188.
Scirpus.

VI. *Cladium* Pat. Br., p. 190.
Cladium.

IV. *Schœnus* L., p. 190.
Schœnus.

I. *Rhynchospora* Vahl., p. 187.
Beak-sedge.

I. *Rhynchospora* Vahl. *Beak-sedge.*—

Spikelets whitish; lower bract about as long as first flowering branch RA; fruit surrounded by 10-13 bristles with teeth pointing downwards; 4-20 in.



Spikelets brown; lower bract much longer than first flowering branch F; fruit surrounded by 5-6 bristles with teeth pointing upwards; 4-16 in.



1. *R. alba* Vahl.
White Beak-sedge.
Bogs: June-Aug. F.

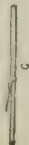
2. *R. fusca* R. and S.
Brown Beak-sedge.
Bogs: June-Aug. F.

1. *Var. multiflora* Lej.; underground stem not creeping, filaments of stamens almost as long as anthers var. *congesta* Lej.; flowers in an irregular head; var. *pallescens* Hoppe; flowers very pale brown, R.

11. *Scirpus* L. *Scirpus*. [Club-rush.]

Stem prostrate or floating with well-developed leaves SF; leaves very narrow; scales of flowers obtuse, green, white at margin; stigmas 2; length variable.

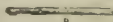
Leaf-sheaths surrounding base of stem terminated by a short limb C.



Limb a short point. 1-5 in.

[See *S. setaceus*.]

Stems without well-developed leaves, not floating. Leaf-sheaths not terminated by a limb P.



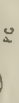
Spikelets 2-5 flowered usually; erect stems narrow; 1-4 in.

Stem creeping with erect tufted branches A. Spikelets more than 5-flowered.

Erect stems very narrow A; stigmas 3; fruits whitish; 1-6 in.

Erect stems rather thick PA; stigmas 2; fruits yellowish; 6-20 in.

Spikelets 2-7 flowered PC; fruit greyish-white, bristles long PF; flower scales striated; 2-12 in.



Spikelets many-flowered; fruit dark brown or greenish; bristles short M; flower scales not striated; 4-12 in.



Spikelets in 2 opposite rows C. Stems triangular in upper part; leaves flat, rough; bract slightly longer than spike C; 4-12 in.



Stems cylindrical and leaves nearly so, smooth; length of bract variable; 4-12 in.

Spikelets solitary or in small clusters SE, S; stems slender, cylindrical. Bract little if any longer than spikelets S; fruit with minute points; 2-8 in.

1. *S. fluitans* L.
Floating Scirpus.

Ponds; ditches: June-Sept. P.

2. *S. cæspitosus* L.

Damp heaths and moors: June-Aug. P.

3. *S. parvulus* R. and S.
Small Scirpus. R.

Wet places near coast: July-Sept. A.

4. *S. acicularis* L.
Needle Scirpus.

Margins of lakes and rivers: June-Sept. P.

5. *S. palustris* L.¹
Marsh Scirpus.

Wet places: June-Aug. P.

6. *S. pauciflorus* Lightf.
Few-flowered Scirpus.

Floods; marshes; sands: June-Sept. P.

7. *S. multicaulis* Sm.
Many-stalked Scirpus.

Marshes: June-Aug. P.

8. *S. compressus* Pers.
Compressed Scirpus.

Marshes: June-Aug. P.

9. *S. rufus* Schrad.
Seaside Scirpus. Loc.

Marshes near sea: July-Aug. P.

10. *S. setaceus* L.
Bristle Scirpus.

Wet sand and gravel: June-Sept. A or P.

11. *S. Savii* S. and M.
Savi's Scirpus. Loc.

Wet places: June-Sept. A. or P.

Spikelets not solitary LC, SI, MA.

Stems usually longer than 12 in.

Flower scales not fringed at apex S, M.



Flower scales fringed at apex LA.



Stems quite cylindrical; bract

Stems triangular, two sides flat, one channelled; bract very long O; 1-4 ft.

Spikelets more than 50, very small, 5-6 mm. long, in clusters of 2-3; inflorescence much branched SI; flower scales oval S; 1½-3 ft.



Spikelets small, 2-7 mm. long, in globular clusters H; stems cylindrical; 2-4 ft.



Spikelets 2-30, inflorescence not much branched H, MA, R.

Spikelets oval, 7-15 mm. long, not in heads MA, R.

Inflorescence of 6-25 spikelets, outer ones stalked, or of 2-3 in a sessile cluster MA; flower scales notched with rough point in notch M; 2-4 ft.



Inflorescence of 2-6 spikelets in a sessile cluster R; flower scales notched without the point; 12-20 in.



scarcely if any longer than inflorescence and appearing to continue the stem LC; 3-9 ft.

12. *S. lacustris* L.
Bulrush. C.
Margins of water; June-Aug. P.13. *S. triquetra* L.
Triangular Scirpus. R.
Tidal rivers; July-Aug. P.14. *S. sylvaticus* L.
Wood Scirpus.
Damp woods; banks of streama.
June-Sept. P15. *S. Holoschoenus* L.
Clustered Scirpus. VR.
Damp sandy shores; July-Sept. P.16. *S. maritimus* L.
Sea Scirpus.
Margins of water; salt marshes; June-Oct. P.17. *S. Rothii* Hoppe.
Roth's Scirpus. VR.
Sandy banks near sea; July-Aug. P.1. *Var. uniglumis* Link: lowest scale flowerless, almost surrounding base of spikelet.—2. *Var. Tabernaemontani* Gmel. stem glaucous green, fruit compressed.

III. *Cyperus* L. *Cyperus*.—

Plant more than 1 ft. high; inflorescence not compact CL; flower scales 5-7 nerved; stamens 3; stigmas 3; leaves 3-5, very long and unequal, forming an involucre CL; 2-4 ft.



Plant usually less than 1 ft. high; inflorescence more compact FU; flower scales 1-nerved; stamens 2; stigmas 3; leaves 3, shorter, unequal, forming involucre; 2-8 in.

IV. *Schoenus* L. *Schoenus*. [Bog-rush.]

Stem bearing at base many blackish shining leaf-sheaths; leaves stiff, prickly at apex (Fig. XI, p. 187), 3-sided. Stems cylindrical; bract long; spikelets 3-10 in rounded head (Fig. C, p. 187); bristles shorter than fruit; 8-24 in. Stems grooved; bract no longer than spike; spikelets 1-4 in a slender spike; bristles longer than fruit; 4-12 in.

V. *Ericophorum* L. *Cotton-grass*.—

Stems bearing a single spike V;



leaves rough along edges; fruits brown; 8-18 in.

Peduncles of spikes smooth, glabrous; fruits black, acute A; leaves triangular in upper part; 12-24 in.



Stems bearing several spikes. Peduncles of spikes rough or hairy; fruits obtuse G, brown or yellowish. leaves triangular from base to apex GR; 8-16 in.

Peduncles of spikes not very rough but very hairy; leaves triangular from base to apex GR; 8-16 in.



Peduncle of spikes very rough, not very hairy; leaves flat except at apex L; 12-24 in.

VI. *Cladium* Pat. Br. *Cladium*.—(Figs. M, CM, p. 187.)

Stems strong, almost cylindrical; leaves stiff; spikelets brownish; fruits brown; 2½-4 ft.

Twig-rush.

1. *C. longus* L.

Galingale. R.

Wet places; July-Sept. P.

2. *C. fuscus* L.

Brown Cyperus. VR.

Wet places; July-Sept. A.

1. *S. nigricans* L.

Black Bog-rush.

Bogs; marshes; wet sandy places; June-July. P.

2. *S. ferrugineus* L.

Brown Bog-rush.

Bogs; wet places; June-July. P.

1. *E. vaginatum* L.

Hare's-tail Cotton-grass.

Bogs; Apr.-May. P.

2. *E. angustifolium* Roth.

Narrow-leaved Cotton-grass.

Bogs; May-June. P.

3. *E. gracile* Koch

Slender Cotton-grass. R.

Bogs; June-July. P.

4. *E. latifolium* Hoppe

Broad-leaved Cotton-grass.

Marshes; May-June. P.

1. *C. Mariscus* R.Br.

Prickly Cladium. Loc.

Wet places; July-Aug. P.

Stems densely tufted; leaves slender, shorter than stems; spikes short, terminal; spikelets 4-5, few-flowered; 6-8 in.

1. *K. caricina* Willd.
Sedge-like Kobresia. Loc.
Moors: July-Sept. P.

VIII *Carex* L. *Carex*. (Sedge.)—The fruit is enclosed in a bottle-shaped sac or perianth which at first eight appears to be the fruit itself. The characteristics of this sac are important for the determination of the species and it is therefore necessary to examine plants which are in fruit.

<p>Flowers not dense P, monæcious, staminate in upper part of spike, pistillate in lower part.</p>	<p>Spike terminal, simple P, D, DI [i.e. each flower is attached directly to the main stalk].</p>	<p>Stems cylindrical; stigmas 2; fruits tapering, reflexed; 8-12 in.</p>	<p>Stem 3-angled; stigmas 3.</p>	<p>Spikelet few-flowered; fruit tapering, reflexed F; 3-6 in.</p>	<p>Spikelet about 12-flowered; fruit obtuse, not reflexed; 3-8 in.</p>
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<p>Flowers dense, dioecious; spike of staminate flowers D, of pistillate DI.</p>	<p>Fruit-sac with a long beak DA; stem 3-angled, rough; leaves rough, not channelled; 4-8 in.</p>	<p>Fruit-sac with a short beak CD; stem rounded, smooth; leaves channelled, smooth; 4-8 in.</p>
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Spike compound DS, TF, D, GL [i. e. the flowers are in groups or spikelets; each spikelet is attached to the main stalk].

1. *C. pulicaris* L.
Flea Carex.
Bogs: May-June. P.

2. *C. pauciflora* Light.
Few-flowered Carex. Loc.
Boggy moors: June-July. P.
3. *C. rupestris* All.
Rock Carex. R.
Mountain rocks: July-Aug. P.

4. *C. Davalliana* Sm.
Davall's Carex.
Bogs (now extinct): May-June. P.

5. *C. dioica* L.
Dioecious Carex.
Spongy bogs: May-June. P.

(See pp. 192-3).

6. *C. divisa* Huds.
Divided Carex. Loc.
Wet places; May-June. P.

upper spikelets
mostly staminate;
8-20 in.



Fruit-sac with a short beak DV;
stem smooth; leaves flat;

Flower-scales brown, no
green nerve along back,
but sometimes apex is long
and green.

Underground stem very long,
horizontal, rooting A.



Fruit-sac with a tapering beak
DC; stem rough at edges;
leaves 3-angled;

middle spikelets
mostly staminate
DS; 1-2 ft.



7. *C. disticha* Huds.
Intermediate Carex.
Wet places; May-July. P.

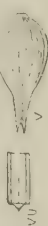
Flower-scales brown with a green nerve along
back; fruit-sac veined, tapering, margin
membranous and winged AR; spike ovoid,
dense A, spikelets many, light brown; 4-12 in.



8. *C. arenaria* L.
Sand Carex. C.
Sandy shores; June-Aug. P.

Fruit-sac
strongly rib-
bed from base
to apex V,
PR.

Fruit-sac about half as broad as Fig. V; stem
sharply 3-angled VU; 1-2 ft.



9. *C. vulpina* L.
Fox Carex.
Wet places; May-July. P.

Fruit-sac with
whitish, mem-
branous mar-
gin in upper
part PN;

Fruit-sac about half as broad as Fig. PR; stem 3-angled, angles not
sharp; 1-2 ft.



10. *C. paradoxa* Willd.
Paradoxical Carex. R.
Marshes; June-July. P.

Fruit-sac
smooth except
at base
where it is
slightly
ribbed PN, T.

Fruit-sac without a
membranous
margin T;



inflorescence
not dense
PA; sides of
stem flat; underground stem vertical; 2-3 ft.



11. *C. paniculata* L.
Panicled Carex.
Wet places; May-July. P.

inflorescence dense TE; sides
of stem rounded; under-
ground stem oblique; 1-2 ft.



12. *C. teretiuscula* Good.
Round-stemmed Carex. R.
Bogs; June-July. P.

Spikelets all similar

Underground stem not very long

Fruits spreading,
star-shaped when
ripe S;Bracts
longer
than
stem R;

Fruits not spreading and star-shaped when ripe.

Spikelets 12 or fewer.



fruit-sac with a long beak ST, flat on one side; flower-scales pale brown, green in middle; 4-12 in.



spikelets distant below, crowded above R; fruit-sac finely 5-7 nerved; 1-2 ft.

13. *C. stellulata* Good.
Star-headed Carex.
Wet places: May-July. P.14. *C. remota* L.
Distant-spiked Carex.
Damp shady places: May-July. P.

Fruit-sac not ribbed from base to apex at least on one side M, CA, greenish, whitish, or reddish-green.

Fruit-sac smooth on one side M, ribbed on the other; spikelets oval MU, upper ones crowded; 1-1½ ft.

15. *C. muricata* L.¹
Prickly Carex.
Pastures; roadsides: May-July. P.

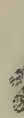
Fruit-sac scarcely ribbed at base CA, margin thickened; spikelets oval CN, 4-6; 1-1½ ft.

16. *C. canescens* L.
Whitish Carex.
Bogs: May-July. P.

Fruit-sac without a membranous margin E; spikelets 7-12, distant EL; fruits much longer than the scales; 1-2 ft.

17. *C. elongata* L.
Elongated Carex. R.
Marshes: May-July. P.

Fruit-sac with toothed membranous margin LE; spikelets 4-6, close LP; fruits about as long as scales; 8-24 in.

18. *C. leporina* L.¹
Oval Carex.
Damp pastures: May-July. P.

Spikelets not all similar in shape; terminal spikelet or spikelets staminate and slender, the others pistillate and thicker or more rounded; E, AT, MA.

(See pp. 194-5.)

1. Var. *dentata* Good.: ligule of leaf obtuse, fruit-sac not spongy at base; fruits almost erect.—2. Var. *argyro ochin* Horn.: spikelets slender, scales whitish.

- Sheaths* of lower leaves *ternate* in *threads* C; stem concave on two sides, flat on the third CA; fruit-sac whitish-green, oval CP; 1 ½-3 ft.
- Stigmas* 2, CD.
- Lower bract *shorter* than stem GO; lower leaves longer than stems; fruit-sac about 1 mm. broad; 8-20 in.
- Stems *smooth*, *sides convex*; spikelets oval T; 8-16 in.
- Lower bract *longer* than stem AT; lower leaves *shorter* than stem; fruit-sac 2-3 mm. broad.
- Stems *rough* at top, *sides concave*; spikelets long, more distant AT; 1-3 ft.
- Fruit-sac with long hairs H, F, beak 2-toothed; bracts long; staminate spikelets 1-3.
- Fruit-sac with a long beak H; fruit-sac with a short beak F; 1 ½-3 ft.
- Flowering-stem bearing spikelets from its base to its apex; leaves much longer than stems (HU, entire plant); bracts at base of spikelets membranous and sheathing; 3-4 in.
- Flower-scales brown, no broad green band on back, sometimes slightly green at apex.
- not in lower.
- or beak not very often solitary.
- entire surface.
19. *C. stricta* Good.
Tufted Carex. R.
Marshes; ponds: Apr.-June. P.
20. *C. vulgaris* Fr.
Common Carex. C.
Wet places: May-June. P.
21. *C. trinervis* Desgl.
Three-nerved Carex. VR.
Near sea: May-July. P.
22. *C. acuta* L.
Acute Carex.
Wet places: May-July. P.
23. *C. hirta* L.
Hairy Carex.
Wet pastures: May-July. P.
24. *C. filiformis* L.
Slender Carex. R.
Bogs: May-June. P.
25. *C. humilis* Leyss.
Dwarf Carex. R.
Downy; dry places: Mar.-Apr. P.
26. *C. ericetorum* Poll.
Heath Carex. VR.
Dry banks in chalky districts: Apr.-June. P.
27. *C. montana* L.
Hill Carex. R.
Heaths; sandy woods: Apr.-May. P.

Flowering-stems bearing spikelets in upper part, but

Fruit-sac with short hairs, either not beaked distinctly toothed M, E.R.; staminate spikelet

Fruit-sac hairy over its

Stigmas 3, H, F.

Flower-scales with broad green band on back, from base to apex.

Lowest bract much shorter than its spikelet D; bracts with a short point DG; terminal spikelet later surpassed by the next below D; leaf-sheaths reddish; 4-12 in.

Lowest bract as long as or longer than its spikelet.

Pistillate spikelets almost globular PI, about 10 mm. long; fruit-sac greenish; bracts almost without sheath P; 8-12 in.

Bracts all the same shape T; staminate spikelet narrow T; 8-16 in.

Pistillate spikelets long T, P.X.

Lowest bract with a long limb TB, the others with a short green point PC; staminate spikelet broad at apex P.X; 4-12 in.

Staminate spikelets 4-7 in. long; leaves usually about $\frac{1}{2}$ in. broad; pistillate spikelets 3-5, drooping, staminate 1-3, drooping later MA; flower-scales brown; 3-5 ft.

Staminate spikelets less than 3 in. long; leaves usually narrow.

Fruit-sac glabrous, rarely slightly hairy along the angles.

28. *C. digitata* L.¹
Fingered Carex. R.
Limestone woods; Apr.-June.
P.

29. *C. pilulifera* L.
Pill-headed Carex. C.
Heaths; moors; glens; May-July. P.

30. *C. tomentosa* L.
VR.
Downy-fruited Carex.
Wet meadows; May-June. P.

31. *C. præcox* Jacq.
Vernal Carex.
Dry pastures; woods; Apr.-May. P.

32. *C. pendula* Huds.
Pendulous Carex. LOC.
Damp woods; shady streams; May-July. P.

1. Var. *orthopoda* Willd.: staminate spikelets very close together at apex, R.

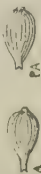
Fruit-sac scarcely beaked, not ribbed except slightly at base and side G;



leaves glaucous; bracts green, long GL; staminate spikelets brownish, rarely solitary; pistillate spikelets drooping when ripe; 4-20 in.



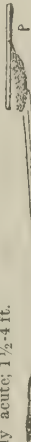
Fruit-sac obscurely 2-toothed, almost globose, about 3-4 mm. long [$\frac{1}{2}$ Figs. A, P.A.].



Stem not very sharply angled AM; fruit-sac inflated, yellowish, beak narrow A, AP; flower-scales very acute; 1-2 ft.



Stem very sharply angled PL; fruit-sac compressed, greenish, beak short PA, P; flower-scales usually slightly acute; $1\frac{1}{2}$ -4 ft.



Fruit-sac distinctly 2-toothed, about 6-8 mm. long [$\frac{1}{2}$ Figs. R, V].

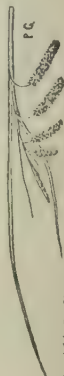
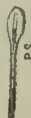


Fruit-sac with short beak R, not inflated, brownish; staminate spikelets broad RI; apices of flower scales very long; $1\frac{1}{2}$ -4 ft.



Fruit-sac with long beak VE, inflated, yellowish; staminate spikelets narrow VE; apices of flower-scales short; $1\frac{1}{2}$ -2 $\frac{1}{2}$ ft.

Pistillate flower-scales at least 10 times longer than broad, apex long and ciliate PS; staminate spikelet greenish; pistillate ones 4-6, drooping PC; $1\frac{1}{2}$ -3 ft.



or greenish.

Leaves hairy, especially the sheaths; fruit-sac not beaked, shining, long; spikelets bent, oval PA; 8-20 in.



33. *C. glauca* Murr.
Glaucous Carex. C.
Damp meadows and woods;
May-July. P.

34. *C. ampullacea* Good.
Bottle Carex.
Bogs; marshes; May-July. P.

35. *C. paludosa* Good.¹
Marsh Carex.
Wet places; margins of water;
May-July P

36. *C. riparia* Curt.
River-side Carex.
Margins of water; wet places;
May-July. P.

37. *C. vesicaria* L.
Bladder Carex.
Pools; marshes; May-July. P.

38. *C. Pseudo-cyperus* L.
Cyperus-like Carex.
Wet places; May-July. P.

39. *C. pallescens* L.
Pale Carex.
Damp shady places; May-July. P.

- Staminate spikelets usually solitary terminal PC, SI, E.
Staminate spikelets brown, brownish, or yellowish.
Fruit-sac with beak less than $\frac{1}{4}$ its own length G, PN, X, DI.
Flower-scales not ciliate, 2-4 longer than broad.
Leaves glabrous.
- Fruit-sac about 7 mm. long $\frac{1}{2}$ Fig. DI, beak very long; staminate spikelet short, 3-9 flowered DE; 1-2 ft. DE
- Fruit-sac about 2-4 mm. long $\frac{1}{2}$ Figs. ST, SI. Fruit-sac not beaked ST, ribbed from base to apex; pistillate spikelets slender, 2 in. long, drooping; 1-2 ft. SI
- Fruit-sac scarcely beaked or veined PN, G. Pistillate spikelets *oval* L.; stems slender; fruit-sac finely nerved; leaves narrow, *folded* lengthways; 4-16 in. SI
- Fruit-sac distinctly beaked, and ribbed at least near angles. X Fruit-sac greenish, beak smooth; 4-16 in. SI
- Leaves flat. DI, beak distant DS, DI. Spikelets greenish; fruit-sac *equally ribbed*; leaves light green; 1-2 ft. DI
- Fruit-sac with beak more than $\frac{1}{4}$ its own length. SI Spikelets brown; fruit-sac with 2 green ribs; leaves glaucous; 1-2 ft. SI
- Staminate spikelets usually solitary terminal PC, SI, E.
Staminate spikelets brown, brownish, or yellowish.
Fruit-sac with beak less than $\frac{1}{4}$ its own length G, PN, X, DI.
Flower-scales not ciliate, 2-4 longer than broad.
Leaves glabrous.
- Fruit-sac about 7 mm. long $\frac{1}{2}$ Fig. DI, beak very long; staminate spikelet short, 3-9 flowered DE; 1-2 ft. DE
- Fruit-sac about 2-4 mm. long $\frac{1}{2}$ Figs. ST, SI. Fruit-sac not beaked ST, ribbed from base to apex; pistillate spikelets slender, 2 in. long, drooping; 1-2 ft. SI
- Fruit-sac scarcely beaked or veined PN, G. Pistillate spikelets *oval* L.; stems slender; fruit-sac finely nerved; leaves narrow, *folded* lengthways; 4-16 in. SI
- Fruit-sac distinctly beaked, and ribbed at least near angles. X Fruit-sac greenish, beak smooth; 4-16 in. SI
- Leaves flat. DI, beak distant DS, DI. Spikelets greenish; fruit-sac *equally ribbed*; leaves light green; 1-2 ft. DI
- Fruit-sac with beak more than $\frac{1}{4}$ its own length. SI Spikelets brown; fruit-sac with 2 green ribs; leaves glaucous; 1-2 ft. SI

Var. *Kochiana* DC.: pistillate flower-scales with pointed apices longer than fruits.

40. *C. depauperata* Good. Starved Carex. R. Dry woods : May-June. P.
41. *C. strigosa* Huds. Thin-spiked Carex. P. Damp woods: May-June. P.
42. *C. sylvatica* Huds. Wood Carex. Damp woods May-June. P.
43. *C. panicea* L. Carnation Carex. C. Moist places: June-July. P.
44. *C. limosa* L. Mud Carex. Loc. Marshes; bogs: June-July. P.
45. *C. extensa* Good. Long-bracted Carex. Salt marshes: June-July. P.
46. *C. punctata* Good. Dotted Carex. Loc. Wet places: May-July. P.
47. *C. distans* L. Distant Carex. Loc. Marshes chiefly near sea: May-July. P.
48. *C. binervis* Sm. Two-ribbed Carex. Heath; moors: June-July. P.

Leaf-sheath with *two membranous outgrowths*, one free and short, the other long and united to sheath L;



fruit-sac long, distinctly ribbed, beak 2-toothed LG; pistillate spikelets cylindrical, erect, greenish; $1\frac{1}{2}$ -3 ft.



49. *C. lævigata* Sm.
Smooth-stalked Carex. R.
Wet thickets: May-July. P.

Leaf-sheath *not having two outgrowths*, the one free, the other united; fruit-sac inflated FL.



Bracts *reflexed* F or spreading;

fruit-sac yellowish; fruits spreading or reflexed; 2-18 in.



50. *C. flava* L.¹
Yellow Carex.
Wet places: May-July. P.

Bracts *erect* FL; fruit-sac greenish; fruits erect, rarely some spreading; 1-2 ft.

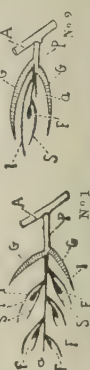


51. *C. fulva* Good.
Tawny Carex.
Boggy places: May-July. P.

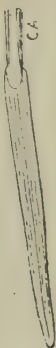
GRAMINEÆ.

The Grasses form the principal part of lawns and pastures; some serve as fodder for animals; others, the Cereals, are valued for their grain, e.g. Wheat, Oat, Barley, Rye, Maize, Rice.—As the grasses are somewhat difficult to determine, a short description of the flowers and leaves is given below.

The flowers of the Grasses are always grouped in small spikes known as *spikelets* which in their turn are grouped in spikes, or in more or less branched racemes. A spikelet of several flowers has usually the parts shown in Fig. No. 1. On the principal stem or branch A of the inflorescence is attached the peduncle P of the spikelet. Near its base the peduncle bears two bracts known as *glumes* G, G; these glumes have no flowers in their axils, i.e. they are empty. Above the glumes on the axis α of the spikelet are other bracts I, I; in their axils are flowers easily recognised because of the swinging anthers and feathery stigmas. These bracts I, I, are the *flowering glumes* or *inferior glumellæ*. Each flower F is placed between an inferior glumella and another bract S borne on the axis of the flower itself and called the *superior glumella*. The glumellæ are also known as *paleæ*. A spikelet may contain only one flower (Fig. No. 2) with or without an aborted second flower α ; the letters in this diagram correspond to those in Fig. No. 1. [In the following descriptions *glumellæ* refers always to the inferior glumellæ or flowering glumes.]



The grass leaf has a small membrane at the junction of the blade and the sheath (Fig. CA). This membrane is called the *ligule* and is often important in the determination of the grass.



Leaves very broad (at least $2\frac{1}{4}$ in.); inflorescence staminate or pistillate.

Spikes several, arising at the same level or almost so (examples: D, SA).

Spikelets all attached directly to principal axis of inflorescence (examples: VL, MO, RE, P).

Spikelets sessile or very shortly stalked.

Spikelets attached in groups to principal axis of inflorescence (examples: O, VI, OD, PR).

Glumes much shorter than rest of spikelet (examples: E, C, A, E, M).

Spikelets on more or less long stalks at least at base of inflorescence C, CA, etc.

Glumes not shorter or barely shorter than rest of spikelet (examples: LA, HM, CS, CA, C).

Group 1, p. 200.

Group 2, p. 200.

Group 3, p. 200.

Group 4, p. 202.

Group 5, p. 203.

Group 6, p. 205.

1. Var. *æderi* Ehrh.: fruit-sac with short beak, fruits spreading but not reflexed plant very small; var. *lepidocarpa* Tausch: spikelets small, scales in fruiting-spikelets brown; stems often rough near apex.

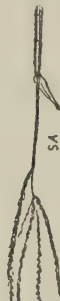
GROUP 1.—See the genus *Zea*.

GROUP 2.—

Glumes more or less *hairy*, *very unequal*; spikelets compressed SS; leaves inrolled.

Glumes *very unequal*, one well developed (g, Fig. S), the other minute;

Glumes *glabrous*; leaves flat.



spikes *not arising at quite the same level* SA; spikelets on short stalks.



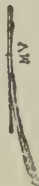
Glumes *almost equal* (g, g, Fig. C);

spikes *arising at same level* D; spikelets sessile.



GROUP 3.—

Plant 1-4 in. high M; leaves *obtus* MI, MV.



Glumellæ *acute*; glumes 2; plant annual, not tufted I.



Leaves *very fine*, rolled at margins when dry.

Glumellæ *awned*; glumes 0; spikes one-sided N; plant perennial, densely tufted N.



I. *Zea* L., p. 207.
Zea.

II. *Spartina* Schreb.
p. 207.
Spartina.

III. *Digitaria* Adans.,
p. 207.
Digitaria.

IV. *Cynodon* Rich.,
p. 207.
Cynodon.

V. *Mibora* Adans.,
p. 207.
Mibora.

VII. *Lepturus* R.Br.,
p. 207.
Lepturus.

VI. *Nardus* L., p. 207.
Mat-grass.

Plant more than 4 in. high; leaves acute.

Leaves flat, not very narrow.

Spikelets
more
or less
covering
one
another
V, VL,
S, A, M.

Glumes long C, R.

Glumes broad,
concave VU,
TT, or tooth-
ed at apex
TM;

spikelets
about as
broad as
long V,
VL.



VIII. *Triticum* L., p. 208.
Wheat.

Spikelet 1 on each notch of axis C, S; glumellæ awned, bearing stiff hairs along margins C.



IX. *Secale* L., p. 208.
Rye.

Spikelets
several
on each
notch
of axis.

Glumellæ not awned, oblique at apex R;



spike 4-9 in.
long A.



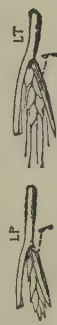
XI. *Elymus* L., p. 209.
Lyme-grass.

Glumellæ with long awns M;
spike shorter M.



X. *Hordeum* L., p. 208.
Barley.

Glume 1 (g, Figs. LT, LP); fruit with a long
white point, glabrous.



XII. *Lolium* L., p. 209.
Lolium.

Spikelets
distant
PI.

Glumes 2
(PI at right,
R, C, A).

Spikelets with short stalks PI, at least
the lower ones.



XIII. *Brachypodium*
P.B., p. 209.
False Brome.

Spikelets sessile
C, R, A.



XIV. *Agropyrum*
Gært., p. 210.
Agropyrum.

GROUP 4.—

Leaves *obtusæ*; spikelet 2-flowered SC; spike dense CCE, usually bluish.

Spikelets short, surrounded by bristle-like rough bracts GL, SV; glumes unequal.

Spikelets *not very close together on axis* OD, becoming yellowish; glumes very unequal (g, g, Fig. AO); roots of plant fragrant.

Spikelets *soft and hairy*, in a dense inflorescence O.

Leaves *acule*.

Inflorescence more or less compact VI, OD, O, AA.



XV. *Sesleria* Scop.,
p. 210.
Sesleria.



XVIII. *Setaria* P.B.,
p. 211.
Setaria.



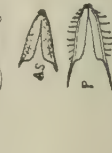
XIX. *Anthoxanthum* L., p. 211.
Anthoxanth.



XVII. *Lagurus* L.,
p. 210.
Hare's-tail.



XVI. *Phalaris* L.,
p. 210.
Phalaris.



XX. *Phleum* L.,
p. 211.
Phleum.



XXI. *Alopecurus* L., p. 212.
Footail.



Spikelets *very close together on axis* AA, AR, P, *not soft and hairy*; glumes equal C, AS, P, AP, G, AG; roots odourless.

Glumes *not united* AS, P; glumellæ 2.

Glumes *united in lower third* AP, AG, or at base G; glumella 1.

XXII. *Scleropoa*
Griseb., p. 212.
Scleropoa.

XXIII. *Echinochloa*
P.B., p. 212.
Echinochloa.

XXVII. *Trisetum*
Pers., p. 213.
Trisetum.

XXVIII. *Avena* L.,
p. 213.
Oat.

XXV. *Sieglingia*
Bernh., p. 212.
Sieglingia.

XXIV. *Phragmites*
Trin., p. 212.
Reed.

XXXVII. *Molinia*
Schränk, p.
219.
Molinia.



Glumes and glumellæ acute, not awned
SC, AI; spikelets 5-10 flowered.

Glumes and glumellæ with long
awns O, CG; spikelets 2-flowered.

Glumes shorter than 4 mm. FV; ovary gla-
brous; fruit not crested or furrowed.

Glumes longer than 5 mm. S; ovary hairy at top; fruit crested and
furrowed.

inflorescence green,
spikelets few DD.

Flowers surrounded by
long hairs; inflores-
cence feathery C.

Flowers not surrounded by long hairs M; spike
let 1-3 flowered M.

Glumellæ 3-toothed
DE;

Glumellæ
entire M;
inflorescence
usually
purplish;
spikelets
numerous C.

Ligule of leaf
replaced by a line
of hairs
(example: D).



Awn absent, or, at or very near
apex of glumella.

Inflorescence
not compact
SC, O, a
panicle.

GROUP 5.—

Awn attached to
back of glumella
FV, S; glumella
2-toothed S;
glumes unequal
FV.

Ligule of leaf not replaced by a line of hairs. (See next page.)

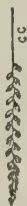
Awn slightly below apex of glumella C, S.



XXIX. *Bromus* L.,
p. 214.
Brome.

Spikelets longer than their stalks; spike 1-sided or very dense.

Spikelets in long spike-like raceme CC, or a head; leaves very narrow, almost smooth.



XXXII. *Cynosurus* L.,
p. 217.
Dog's-tail.

Spikelets in compact clusters D; leaves rough.



XXXIII. *Dactylis* L.,
p. 217.
Cock's-foot.

Leaves obtuse.

[See XXXVIII. *Catabrosa.*]

Spikelets broader than or as broad as long B, almost heart-shaped, very distant one from another ME.



XXXIV. *Briza* L., p. 217.
Quakegrass.

*Glumella with awn at least as long as itself V, BR. [See XXXV. *Festuca.*]*



Glumellæ awnless, back rounded, apex obtuse F, A; glumes membranous, unequal F, A; plant aquatic.



XXXVI. *Glyceria* R.Br.
p. 219.
Glyceria.

Awn absent or at apex of glumella.

Shorter than their stalks, distinct ME;

acute.

than broad A, H, AR.

than awn.

<p>Spikelets usually inflorescence</p> <p>Leaves</p> <p>Spikelets longer</p> <p>Glumellæ awnless, or longer</p> <p>Glumellæ not at the same time having back rounded and apex obtuse.</p>	<p>Glumellæ awned or acute, back rounded H, A, R; glumes unequal H, A, R.</p> <p>Glumellæ awnless, back keeled, apex scarcely acute; glumes scarcely unequal.</p>	<p>Glumella not awned on back A; inflorescence cylindrical S.</p> <p>Glumella awned on back S, F; inflorescence a loose panicle.</p>	<p>Glumellæ sharply toothed laterally CE; glumellæ shortly awned on back CS.</p> <p>Glumellæ not toothed; glumella with long awns on back AL, CA, I, or awnless.</p>	<p>Glumes broad O, P.</p>	<p>Glumes less than 13 mm. broad.</p>	<p>XXXV. <i>Festuca</i> L., p. 213. <i>Fescue</i>.</p> <p>XXXI. <i>Poa</i> L., p. 216. <i>Meadow-grass</i>.</p> <p>XXVI. <i>Psamma</i> P.B., p. 213. <i>Marram</i>.</p> <p>XXXIX. <i>Agrostis</i> L., p. 219. <i>Agrostis</i>.</p>
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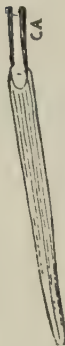
GROUP 6.—

Branches of inflorescence *very wavy* L; spikelets *without glumes*; glumellæ 2, very hairy O.



XL. *Leersia* Sw.,
p. 220.
Leersia.

Leaves *obtusæ* CA; glumellæ 3-nerved.



XXXVIII. *Catabrosa*
P.B., p. 219.
Catabrosa.

Inflorescence *close* K, *axis hairy*; glumes 1-3 nerved; spikelets 2-7 flowered.



XXX. *Koeleria* Pers.,
p. 216.
Koeleria.

Branches of inflorescence *not wavy*; spikelets *with glumes*.

Spikelets *distant* ML.



XLI. *Milium* L.,
p. 22.
Millet-grass.

Inflorescence *axis glabrous* or nearly so.

Spikelets in *compact clusters* P.
(See XVI. *Phalaris*.)



Glumellæ 3-4 mm. long.

Glumellæ 5-7 mm. long; spikelets in a raceme-like panicle.

XLII. *Melica* L.,
p. 220.
Melick.

Glumellæ *mixed with long silky hairs* E, L.A.



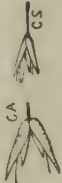
XLIII. *Calamagrostis*
Adans., p. 220.
Small Reed.

Leaf-sheaths *hairy* LN; awn of glumella bent HL



XLIV. *Holcus* L.,
p. 220.
Holcus.

Glumellæ *not mixed with long hairs* HL, CA.



Leaf-sheaths *glabrous*; awn of glumella straight CA, CS.



XLV. *Aira* L., p. 221.
Hair-grass.

[Glumellæ *acutæ*.

[Glumellæ *acutæ*.

I. *Zea L. Zea.*—

Staminate inflorescence terminal, a panicle; pistillate inflorescence lateral, a spike, ensheathed by leaves; 3-7 ft. [Indian Corn.]

II. *Spartina Schreb. Spartina.*—

Ligule of leaf short, toothed; leaf shorter than spikes; axis of spike not prolonged beyond spikelets; spikelets closely pressed together; plant very rigid; 1-2 ft. (Fig. 88, p. 200.)

Ligule of leaf replaced by hairs; leaf as long as or longer than spikes; axis of spike prolonged beyond spikelets; spikelets loosely pressed together, distinctly alternate; 2-3 ft.

III. *Digitaria Adans. Digitaria.*—

Leaf-blade *hairy on both surfaces, leaf-sheath hairy* DS;



Leaf-blade *glabrous, leaf-sheath hairy only at apex* F;



upper glume as broad as glumella; spikes fewer; 4-9 in.

upper glume narrower than glumella (g, Fig. 8, p. 200); 4-20 in.

1. *Z. Mais L. ✕*

Maize.
Cultivated: June-Sept. A.

1. *S. stricta Roth*

Cord-grass. Loc.
Muddy salt marshes: July-Sept. P.

2. *S. alterniflora Lois.*
Alternate-flowered Spartina. Loc.

Mud flats: July-Sept. P.

*1. *D. sanguinalis Scop.*

Hairy Digitaria. Loc.
Waste and cultivated places: July-Oct. A.

*2. *D. humifusa Pers.*

Glabrous Digitaria. Loc.
Sandy places: July-Oct. A.

1. *C. Dactylon Pers. ✕*

Creeping Cynodon. Loc.
Sandy shores: July-Oct. P.

1. *M. verna Adans.*

Spring Mibora. R.
Sandy coasts: Mar-May. A.

1. *N. stricta L.*

Mat-grass. C.
Moors; heaths: June-Aug. P.

1. *L. filiformis Trin.*

Slender Lepturus.
Sea coasts: June-Sept. A.

IV. *Cynodon Rich. Cynodon.*—(Figs. C, D, p. 200.)

Stems bearing, near their base, branches with short scale leaves, creeping, rooting; leaves often hairy below; inflorescence usually purplish; 8-20 in. Dog's-tooth Grass; Bermuda Grass.]

V. *Mibora Adans. Mibora.*—(Figs. MI, MV, M, p. 200.)

Stems forming small tufts; leaves short, channelled; inflorescence usually purplish-red, sometimes green; 1-4 in.

VI. *Nardus L. Mat-grass.*—(Fig. N, p. 200.)

Plant tufted, glabrous; stems stiff; leaves mostly radical, fine, stiff; spikelets 1-flowered, usually purplish or bluish; spike simple, slender; 4-8 in.

VII. *Lepturus R.Br. Lepturus.*—(Fig. I, p. 200.)

Stems slender; leaves rolled at margins; spikes long, slender; spikelet 1-flowered; glumes 4-5 mm. long; 4-12 in. Hard-grass.]

VIII. *Triticum* L. *Wheat*.—

Glumes 3-toothed at apex TM;



spike slightly compressed, axis fragile; spikelets in 2 distinct opposite rows MO; ligule of leaf very short; 2-4 ft.

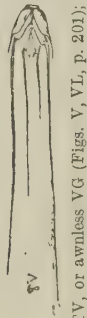


Glumes with a long apex pointed

Glume glabrous, keel not prominent at base VU;



stem hollow through- out its length; glumellæ awned TV, or awnless VG (Figs. V, VL, p. 201); 2½-5 ft.



VU, TT.

Glume distinctly keeled, almost winged, usually hairy TT;



stem solid, at least in the upper part; glumellæ with long awns or awnless; 4-6 ft.

IX. *Secale* L. *Rye*.—(Figs. C, S, p. 201.)

Spike often drooping; glumes narrow, pointed; glumellæ ciliated on the back, with long awns; 2½-4 ft.

X. *Hordeum* L. *Barley*.—

Leaf-sheath smooth.

Stem erect; glumes equal; spike with 4-6 prominent angles, thick V; 2-3½ ft.



Stem decumbent; glumes unequal, ciliate or awn-like; spike without prominent angles M.



Leaf-sheath very hairy in upper part EU;

Leaves 5-8 mm. broad; stem erect; spike about 3 in. long; 1½-3 ft. (Figs. E, EU.)



Leaf-sheath hairy, at least in lower leaves.

Leaves 3-4 mm. broad; stem prostrate, bent at nodes; spike short, thick; [Squirrel-tail Grass.]



Leaf-sheath uniformly hairy; leaves narrow; spike somewhat compressed; glumes all awn-like; 1-2 ft.

1. *T. monococcum* L. *Small Spelt.*
Cultivated: June-July. A. or B.

2. *T. sativum* Lam. *Common Wheat.*
Cultivated: June-Aug. A. or B.

3. *T. turgidum* L. *Rivet Wheat.*
Cultivated: June-July. A.

1. *S. cereale* L. *Rye.*
Cultivated: May-June. A. or B.

1. *H. vulgare* L. *Common Barley.*
Cultivated: June-Aug. A. or B.

2. *H. murinum* L. *Wall Barley.*
Roadsides; waste places: June-Sept. A. or B.

3. *H. sylvaticum* Huds. *Wood Barley.* Loc. Woods and thickets: June-July P.

4. *H. maritimum* With. *Sea Barley.*
Sea coasts: June-July. A.

5. *H. pratense* Huds. *Meadow Barley.*
Moist meadows: June-July. P.

XI. *Elymus L. Lyme-grass*.—(Figs. R, A, p. 201.)

Plant glaucous; underground stem long, creeping; leaves long, creeping; leaves long, stiff, apex hard and acute, ligule ciliate; spike 8-12 in; 2-4 ft.

XII. *Lolium L. Lolium*.—

Glume shorter than spikelet (g, Fig. LP); glumellæ awnless LP, I, PE, or awned.



Glume longer than spikelet (g, Fig. LT);

XIII. *Brachypodium P.B. False Brome*.—

Awn longer than the rest of glumella; inflorescence more or less drooping S; spikelet 5-10 flowered; 1-3 ft.



Awn shorter than the rest of glumella; inflorescence erect P; spikelet 8-25 flowered; 1-2 ft.



1. **E. arenarius L.**
Sea Lyme-grass.
Sandy shores: July-Aug. P.

*1. **L. linicolum** Sond.
Flax Lolium. R.
Flax fields: June-July. A.
*2. **L. multiflorum** Lam.
Many-flowered Lolium.
Cultivated fields: June-July. A.

3. **L. perenne L.** ✠
Rye-grass. VC.
Meadows; pastures: May-Sept. P.

*4. **L. temulentum L.** ✠
Darnel.
Fields: June-Aug. A.

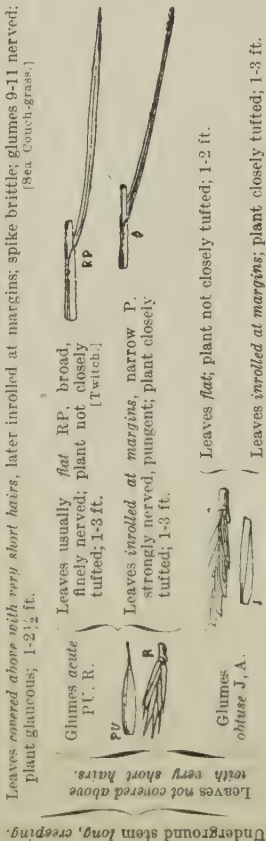
1. **B. sylvaticum** R. and S.
Wood False Brome. C.
Woods; shady places: June-July. P.

2. **B. pinnatum** P.B.
Heath False Brome.
Dry places: June-Aug. P.

1. *H. hazastichum* L. ✠ (Six-rowed Barley): spikelets in 6 rows all equal in fruit; *H. distichum* L. ✠ (Two-rowed Barley): spike compressed, spikelets in six rows, 2 rows pistillate and more prominent than the others; both are sometimes cultivated. — 2. Var. *italicum* A.Br. ✠ [Italian Rye-grass]: young leaves rolled at margins, spikelets distant from axis during flowering, plant perennial.

XIV. *Agropyrum* Gært. *Agropyrum*.—

Underground stem *short, not creeping*; awns longer than glumellæ C, CA; glumes 3-5 nerved; leaves rough on both surfaces; 1½-3 ft.

XV. *Sesleria* Scop. *Sesleria*.—(Figs. SC, CCE, p. 202.)

Stem almost leafless in upper part; leaf-sheath not split; spikelets usually bluish; 4-20 in. [Moor-grass.]

XVI. *Phalaris* L. *Phalaris*.—

Spikelets *sessile, dense*; glumes with 2 green bands, winged; leaves rough on both surfaces; 1-3 ft. (Figs. C, P, p. 202).

Spikelets *stalked, compact*; glumes green-nerved, keeled; inflorescence narrowed at base and apex, glaucous green or purplish; leaves rough, apex long and acute; 2-5 ft. (Fig. P, p. 202.)

XVII. *Lagurus* L. *Hare's-tail*.—(Fig. O, p. 202.)

Stems slender; leaves lanceolate, downy; spike oval, dense, soft, hairy; 4-16 in.

1. *A. caninum* R. and S. *Fibrous Agropyrum*. Woods; shady places: June-Aug. P.

2. *A. junceum* P.B. *Jointed Couch-grass*. Sandy shores: June-Aug. P.

3. *A. repens* P.B. *✠ Couch-grass*. C. Fields; waste places: June-Aug. P.

4. *A. pungens* R. and S. *Pungent Couch-grass*. Sandy shores: June-Aug. P.

5. *A. acutum* Rø. *✠ Acute Couch-grass*. Sandy shores: June-Aug. P.

6. *A. pycnanthum* G.G. *Dense-flowered Couch-grass*. Sandy shores: May-June. P.

1. *S. cærulea* Ard. *Blue Sesleria*. Dry mountain pastures; rocks: Apr.-May. P.

*1. *P. canariensis* L. *Canary-grass*. Cultivated ground; waste places: June-Sept. A.

2. *P. arundinacea* L. *✠ Reed-grass*. C. Watery places: June-July. P.

1. *L. ovatus* L. *Hare's-tail*. Sandy places: May-June. A.

XVIII. *Setaria* P.B. *Setaria*.—

Bristle-like bracts with hairs directed downwards VE;



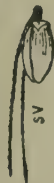
spike rough to the touch; upper glume about as long as glumella; leaves rough at margins and above; 1-2 ft.

Bristle-like bracts with hairs directed upwards SV.



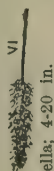
Bracts ruddy-yellow; glumella wrinkled transversely GL;

Bracts green or reddish; glumella almost smooth SV;



upper glume shorter than glumella; 4-20 in.

upper glume about as long as glumella; 4-20 in.

XIX. *Anthoxanthum* L. *Anthoxanth*.—(Figs. AO, OD, p. 202.)

Upper part of leaf-sheath ciliated; glumes membranous at margin; spikelet having 1 developed flower, stamens 2; awns equalling glumes; 4-20 in.

XX. *Phleum* L. *Phleum*.—

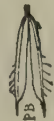
Glumes rough, keel not ciliate AS;



leaf-sheath slightly inflated; inflorescence long PA, glaucous green; 4-12 in.



Glumes rough, awn short PB; inflorescence often pinkish or yellowish-green, long B; 8-20 in.



Glumes ciliate on keel PB, P, AN.

Glumes smooth.

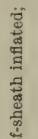
Awn about $\frac{1}{2}$ length of glume P; inflorescence cylindrical PP; leaf-sheath not inflated; 1-3 ft. [Cat's-tail Grass.]



Awn about $\frac{1}{2}$ length of glume; inflorescence shorter; leaf-sheath inflated; 8-16 in.



inflorescence blunt and broader at apex AR; 4-8 in.



Glumes not awned, apex very short AN;



inflorescence shorter; leaf-sheath inflated; 8-16 in.



*1. *S. verticillata* P.B. *Rough Setaria*. R. Waste places: July-Oct. A.

*2. *S. glauca* P.B. *Glaucous Setaria*. R. Waste places: July-Oct. A.

*3. *S. viridis* P.B. *Green Setaria*. R. Waste places: July-Oct. A.

1. *A. odoratum* L.¹ *Vernal-grass*. VC. Meadows; woods: May-June, P.

*1. *P. asperum* Jacq. *Rough Phleum*. VR. Dry places: June-Aug. A.

2. *P. Bæhmieri* Wib. *Bæhmier's Phleum*. R. Dry places: June-Aug. P.

3. *P. pratense* L.¹ *Timothy-grass*. C. Meadows; pastures: June-July. P.

4. *P. alpinum* L. *Alpine Phleum*. R. Rocks; pastures: June-Sept. P.

5. *P. arenarium* L. *Sand Phleum*. Sandy places: June-July. A.

1. Var. *Puellii* Lec. and Lam.: plant annual, stem much branched at base, awns longer than glumes, introduced in fields.—2. Var. *nodosum* L.: stem swollen at base, spike shorter, C.

1. *P. arenaria* R. and S.
Marram.
Sandy shores: June-July. P.
2. *P. baltica* R. and S.
Baltic Marram. R.
Sandy shores: June-July. P.
1. *T. flavescens* P.B.
Yellow Trisetum.
Dry fields: June-July. P.

1. *A. orientalis* Schreb.
✠
Cultivated: June-Aug. A.

2. *A. sativa* L. ✠
Oat.
Cultivated: July-Aug. A.

3. *A. strigosa* Schreb.
Cornfields: July-Aug. A.

4. *A. fatua* L.
Wild Oat. C.
Cultivated and waste places:
Ju e-July. A.

5. *A. pratensis* L.
Field Oat.
Dry pastures; rocky places:
June-July. P.

6. *A. pubescens* L.
Downy Field Oat.
Dry pastures; rocky places:
June-July. P.

7. *A. elatior* L.
False Oat. C.
Meadows; bedges; thickets:
June-July. P.

Inflorescence *dense*; glumes acute; 1-3 ft.

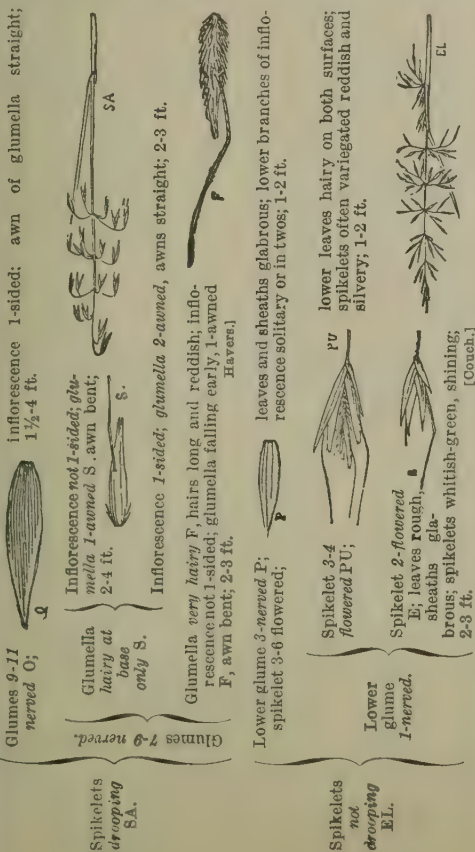
Inflorescence *interrupted*; glumes very acute; 2-4 ft.

XXVII. *Trisetum* Pers. *Trisetum*.—(Figs. FV, FL, p. 203.)

Leaves flat; spikelets shining, yellowish, rarely purplish, 2-3 flowered; 1-2 ft.

[Yellow-Oat.]

XXVIII. *Avena* L. *Oat*.—



1. *Var. f. tenuis* Sm.: awn not longer than glumes, inflorescence a glaucous green, R.

XXIX. *Bromus* L. *Brome*.—

Plant 3-6 ft. high; leaves dark-green, almost glabrous, often recurved at apex, spikelets 3-9 flowered G; stem glabrous.



Awns and glumellæ bent outwards at maturity; panicle erect, branches rough; upper part of stem glabrous; 6-12 in.



Upper part of stem glabrous; spikelets glabrous, awns curved slightly inwards S; ligule short, ragged; 1-2½ ft.

Branches of panicle rough.

Awns and glumellæ not bent outwards; panicle usually drooping.

Plant 1½-2½ ft. high.

Awn longer than glumellæ G, S, T.

Upper part of stem hairy; spikelets downy, awns straight; ligule long, prominent; 1-3 ft.



Branches of panicle not rough; upper part of stem hairy; spikelets usually hairy T, all drooping and 1-sided TE; 8-24 in.

1. *B. giganteus* L.
Tall Brome.
Shady places; June-Aug. P.

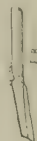
2. *B. madritensis* L.
Compact Brome. R.
Dry sandy places; June-July. A.

3. *B. sterilis* L.
Barren Brome. C.
Waste places; fields; June-Sept. A.

4. *B. maximus* Desf.
Great Brome. R.
Sandy places; June-Aug. A.

*5. *B. tectorum* L.
Roof Brome. R.
Waste places; walls; roofs; June-July. A.

Branches of panicle erect; lower leaves narrower than the others; sheaths more or less hairy ER; 2-3½ ft.



6. *B. erectus* Huds.
Upright Brome.
Fields; woods; sandy places; June-Aug. P.

Branches of panicle drooping; leaves all equally narrow; lower sheaths bearing more or less reflexed hairs A; 3-6 ft.



7. *B. asper* Murr.
Hairy Brome.
Fields; thickets, woods; June-Aug. P.

Glumes about 6 times as long as broad; glumellæ angular on back; spikelets elongated E.



AWN about as long as, or shorter than glumella E, SE, M.

Glumes
3-4 times
as long
as broad;
glu-
mellæ
rounded
on back;
spike-
lets
slightly
elon-
gated
SE, M,
C, A.

Glu-
mellæ
not
spread-
ing,
always
closely
imbr-
icated
M, C, A.

AWNS curving
outwards at
maturity.

AWNS not curving outwards C, A.

Glumellæ spreading at maturity SE; panicle loose, more or less drooping; 1-3 ft.



8. **B. secalinus** L.
Rye Brome.
Fields; June-July. A.

Longest peduncles much longer than spikelet; panicle spreading or drooping, compound; 9-18 in.

Longest peduncles shorter than spikelet; panicle drooping, simple; 8-20 in.

*9. **B. patulus** Parl.
Waste places; June-July. A.

*10. **B. squarrosus** L.
Waste places; June-July. A.
or B.

Spikelets covered with fine hairs M; panicle not spreading MO; 8-30 in.

[Lop-grass.



11. **B. mollis** L.
Soft Brome. C.
Fields; waste places: May-
July. A.

Spikelets glabrous C, stalks short C,
not spreading; leaf-sheaths hairy;
1-2½ ft.



12. **B. racemosus** L.¹
Smooth Brome. C.
Fields; waste places: June-
July. A.

Spikelets almost glabrous, stalks very long A, spreading



*13. **B. arvensis** L.
Field Brome.
Fields; waste places: June-
Aug. A.

horizontally after flowering; 1-3 ft.

1. Var. *commutatus* Schrad.: spikelets drooping, R.

XXX. *Kæleria* Pers. *Kæleria*.—

Fibres of old leaf-sheaths not forming a net-work around base of stem CR leaves usually hairy; 6-18 in. (Fig. K, p. 206.)

Fibres of old leaf-sheaths persistent, forming a net-work around base of stem; leaves glaucous; 4-12 in.

XXXI. *Poa* L. *Meadow-grass*.—

Stem bulbous at base BU; ligule of leaf acute BL; flowers spreading PB, webbed at base, often modified as leaves; 4-12 in.



Leaves hooded at apex S; spikelet 3-5 flowered; 2-3½ ft.



Leaves folded in two lengthwise C; spikelet 5-9 flowered; branches of inflorescence usually in twos; 1-1½ ft.



Stem flattened, 2-edged C.

Plant an annual; branches of inflorescence spreading, solitary or in twos A; leaves folded lengthwise or involute; ligule of upper leaves rounded; 2-12 in.



Plant 2-12 in. high.

Plant perennial; ligules acute.

Inflorescence lax, usually not spreading; spikelets 2-3 flowered; 4-8 in.

Inflorescence denser; spikelets more or less crowded, 4-6 flowered; flowers often modified as leaves; 4-12 in.

Glumella strongly 5-reined, slightly acute; 1-2½ ft.

Ligule of leaf long, acute T.



Glumella obscurely 5-reined, acute; 1-3 ft.

Stem rounded. high.

1. *K. cristata* Pers.¹
Crested Kæleria.

Dry pastures: June-July. P.

2. *K. valesiaca* DC.
Valeis Kæleria. R.

Dry places; July-Aug. P.

1. *P. bulbosa* L.

Bulbous Meadow-grass. R.
Sandy places near sea: Apr.-June. P.

2. *P. sudetica* Hænke
Silesian Meadow-grass. R.
Woods: June-July. P.

3. *P. compressa* L.
Flattened Meadow-grass.
Walls; rocks; sandy places: June-Aug. P.

4. *P. annua* L.
Annual Meadow-grass. VC.
Fields; walls; roadsides; lawns: Jan.-Dec. A.

5. *P. laxa* Hænke
Lax-flowered Meadow-grass. VR.
Pastures; rocks: July-Aug. P.

6. *P. alpina* L.
Alpine Meadow-grass. Loc.
Pastures; rocks: July-Aug. P.

7. *P. trivialis* L. ✕
Roughish Meadow-grass. VC.
Moist places: May-July P.

*8. *P. palustris* L.
Marsh Meadow-grass. R.
Near rivers: June-July. P.

Plant 1-3

Ligule of leaf
very short or
almost
undeveloped P.



usually shorter than
blade N; lateral nerves
of glumella glabrous; spikelets seldom purplish; 1-2½ ft.

Sheath of upper
leaf usually
longer than
blade PR; lateral nerves of glumella hairy; spikelets often purplish; 1-2½ ft.



9. *P. nemoralis* L.
Woods; moist rocks: June-Aug. P.

10. *P. pratensis* L. ✠
Smooth Meadow-grass.
VC.
Meadows; pastures; waste places: June-Aug. P.

XXXII. *Cynosurus* L. *Dog's-tail*.—

Inflorescence long, 1-sided (Fig. CC, p. 204); awn shorter than glumella; ligule of leaf short; plant perennial; 8-24 in. [Bents.]

Inflorescence dense, ovoid; awn about twice as long as glumella; ligule long; plant annual; 8-24 in.

XXXIII. *Dactylis* L. *Cock's-foot*.—(Fig. D, p. 204.)

Leaves rough on margins; lower leaves die away when plant flowers; glumes unequal; 1-4 ft.

XXXIV. *Briza* L. *Quakegrass*.—

Spikelets usually few, 7-10 mm. broad, many-flowered, reddish or shining white; 8-20 in.

Ligule of leaf short, obtuse; leaf usually 2-4 mm. broad; 8-18 in.

Spikelets very numerous, 2-5 mm. broad, few-flowered, greenish or purplish. (Figs. B, ME, p. 204.)

Ligule of leaf long, more or less acute; leaf usually 4-6 mm. broad; 4-12 in.

1. *C. cristatus* L.
Crested Dog's-tail. C.
Dry hilly pastures: June-Aug. P.

2. *C. echinatus* L.
Rough Dog's-tail. Loc.
Waste places: May-July. A.

1. *D. glomerata* L.
Cock's-foot Grass. VC.
Fields; waste places: May-Aug. P.

*1. *B. maxima* L.
Large Quakegrass. Loc.
Waste places; gardens: May-June. A.

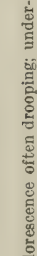
2. *B. media* L.
Common Quakegrass. C.
Meadows; waste places: June-July. P.

3. *B. minor* L.
Lesser Quakegrass. R.
Dry fields: June-July. A.

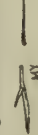
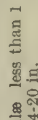
1. Var. *albescens* DC.: plant bearing short hairs; leaves rolled; dunes.—2. Var. *angustifolia* L.: lower leaves narrow, rolled.

XXXV. *Festuca L. Fescue.*—

Leaves more or less rolled.

All or nearly
all leaves
rolled A, O.Underground stem *very long, creeping* A; ligule
bifid, one lobe very prominent; 1-2 ft.Lower leaves
rolled, upper
ones flat.Underground stem *short*; leaves
ligule bifid, lobes short; 4-20 in.Lower leaves
rolled, upper
ones flat.Spikelets 5-10 *flowered*
R, green or purplish;
inflorescence erect RU;Lower leaves
rolled, upper
ones flat.Underground stem *long*; 1-3 ft.
Spikelets 4-5 *flowered*
H, usually green;inflorescence often drooping; under-
ground stem short; 1½-3 ft.
Stem 1-2½ ft; plant perennial; stalks of lower
spikelets fairly long.Spikelets 5-12
flowered PR.Leaves
all flat.Spikelets 4-5
flowered AR.Ligule of leaf 3-5 mm. S; ovary hairy
near apex; 2-4 ft.Awn as
long as
or longer
than
glumella
BR, V.Lower glume *minute or absent*; *stamens* 3; upper glume about ½ in. long, acute; 6-12 in.Lower
glume
distinct;
stamen 1.Upper glume
about 1 in.

glumellæ 1 in. or more BR; 4-20 in.

Upper glume about ¼ in.
long, acute MY;glumellæ less than 1
in. V; 4-20 in.1. *F. oraria* Dumort.
Sea-side Fescue. R.
Sandy shores; June-Aug P.2. *F. ovina* L.¹
Sheep's Fescue. VC.
Dry pastures; June-July. P.3. *F. rubra* L.
Red Fescue.
Dry places May-June. P.4. *F. heterophylla* Lam.
Various-leaved Fescue. R.
Shady places; June-July. P.5. *F. pratensis* Huds.
Meadow Fescue. O.
Wet meadows; June-July. P.6. *F. arundinacea*
Schreb.
Tall Fescue.
Wet places; June-July. P.7. *F. sylvatica* Vill.
Reed Fescue. R.
Woods; June-July. P.8. *F. uniglumis* Soland.
One-glumed Fescue. Loc.
Sandy shores; June-July. A.9. *F. bromoides* L.
False-brome Fescue.
Walls; rocks; dry places;
June-July. A.10. *F. Myuros* L.³
Rat's-tail Fescue.
Walls; rocks; dry places;
May-July. A.

Plant usually
more than
1½ ft.;
glumellæ
7-nerved;
leaves flat.

Spikelets long,
5-18 flowered
F.
Spikelets short,
flowered A.

Leaves rolled at margins; branches of inflorescence becoming erect M; 4-16 in.

Plant usually
not more
than 1½ ft.;
glumellæ
5-nerved or
fewer.

Leaves
flat.

Branches not bearing spikelets at
nerves of glumellæ faint; $\frac{1}{2}$ - $1\frac{1}{2}$ ft.

Branches bearing spikelets at their base P; nerves of glumellæ prominent; 4-8 in.

XXXVII. *Molinia* Schrk. *Molinia*.—(Fig. M, p. 203.)

Stem erect; leaves, except 2-4, tufted and radical; branches o

XX XVIII. *Catabrosa* P. B. *Catabrose*.—(Fig. CA, p. 206.)

Leaves flat, bright green; inflorescence spreading; glumellæ distinctly 3-nerved; $1.2\frac{1}{2}$ ft.

XXXIX. *Agrostis* L. *Agrostis*.

Leaves } Leaves *narrow*; radical leaves involute;
involute; } leaf-sheaths smooth; branches of info-
 awn of } rescence spreading when in flower CN,
 glumella } not bearing spikelets at their base CN: 1

Leaves *bristle-like*, short, glaucous: leaf-sheaths bent CA.

Awn short AL,
or absent;

upper glume *shorter* than lower AL; spikelets whitish or purplish; 4-36 in.

Leaves flat;
glumella awn
or awn strain

AWN much longer than spikelet I;

upper glume *longer* than lower I; spikelets many, greenish or purplish; 1-3 ft. [Wind-grass.]

1. Var. *tenusifolia* Sm.: glumellæ acute, not awned, inflorescence narrow, C; var. *duriuscula* L.: leaves folded, stiff, almost smooth, C; var. *glauca* Schrad.: leaves glaucous, stiff, almost smooth.—2. Var. *pseudo-myrsos* Soy.-Will.: inflorescence long, very close to upper sheath; var. *sciuroides* Roth: inflorescence short, not close to upper sheath.—3. Var. *plicata* Fr.: lower branches of inflorescence in four or five, glumellæ rounded at apex, R.—4. Var. *Borreri* Bab.: leaves short, stems tufted, no creeping branches, plant glaucous, glumellæ acute, salt marshes, R.—5. Var. *euergatis* With.: ligule very short, inflorescence large, spreading, C; var. *maritima* Lam.: leaves rolled, yellowish-white, dunes.—6. Var. *interrupta* L.: inflorescence narrow, not spreading, interrupted, anthers oval.

XL. *Leersia Sw. Leersia.*—(Figs. L, O, p. 206.)


Inflorescence greenish-white; stem hairy at nodes; leaves rough, sheaths compressed; 2-4 ft.


[Cut-grass.]


XLI. *Milium L. Millet-grass.*—(Fig. MI, p. 206.)

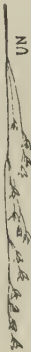
Spikelets often purplish, many, on very long branches; leaves flat, rough-edged; 2-4 ft.

XLII. *Melica L. Melick.*—


Ligule of leaf *very short, blunt*,
hairy N; 


spikelets 2-flowered, drooping
NU; 1-2 ft. 


Ligule of leaf drawn out into a *long point* U;
spikelets 1-flowered, erect UN; 1-2 ft. 



XLIII. *Calamagrostis Adans. Small Reed.*—

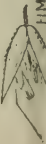
Inflorescence *close* EP; spikelets *crowded* EP;
awn on back of glumella, slightly longer
than hairs E, 2-4 ft. 

Glumes *about*
as long as
hairs E, L.A. 

Inflorescence *loose* L; spikelets
spreading L; awn at apex of
glumella, very short LA; 2-4 ft. 


Glumes *longer than hairs*; inflorescence close, narrow, long; awn on back of glumella, slightly longer than hairs; 1-2 ft.

XLIV. *Holcus L. Holcus.*—

Glumes *acute*
HM; 

awn of staminate flower *much longer than glumes* HM; leaves more or
less hairy; underground stem very long; 1 1/2-3 ft. [Soft-grass.]

1. **L. *oryzoides Sw.***
False-rice Leersia. VR.
Wet places: Aug.-Oct. P.

1. **M. *effusum L.*** 
Spreading Millet-grass. C.
Woods: June-July. P.


1. **M. *nutans L.***
Mountain Melick. Loc.
Woods in hilly districts: May-
June. P.

2. **M. *uniflora Retz.***
Wood Melick.
Woods; shady places: May-
June. P.

1. **C. *Epigeios Roth***
Wood Small Reed.
Damp shady places: July-
Aug. P.

2. **C. *lanceolata Roth***
Purple Small Reed. R.
Boggy places: July-Aug. P.

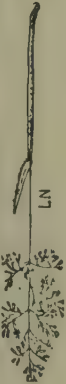
3. **C. *neglecta Fl. de***
Wett.
Narrow Small Reed. VR.
Marshes: June-Aug. P.

1. **H. *mollis L.*** 
Soft Holcus.
Meadows; woods: sandy soils:
June-Aug. P.



Glumes *obtus*
HL;

awn of staminate flower *little if any longer than glumes* HL; leaves
very hairy; underground stem short; 1½-3ft.
[Yorkshire Fog.]



XLV. *Aira L. Hair-grass.*—

Annual; roots
slender CR, P;
awn straight.



Spikelets *shorter* than their stalks,
spreading CR; ligule not lobed;
4-12 in.



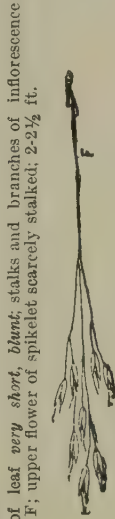
Spikelets *longer* than their stalks, close
together P; ligule lobed; 2-8 in.

Awns
longer than
glumes.



Ligule *long, acute*; stalks of spikelets almost
straight T, upper flower shortly stalked;
1-2½ ft.

Perennial;
underground
stem present;
awn bent at base.



Ligule of leaf *very short, blunt*; stalks and branches of inflorescence
wavy F; upper flower of spikelet scarcely stalked; 2-2½ ft.

2. *H. lanatus* L. $\frac{H}{H}$
Woody Holcus. VC.
Meadows; waste places: June-
Sept. P.

1. *A. caryophyllea* L.
Silvery Hair-grass.
Heaths dry pastures May-
July. A.

2. *A. præcox* L.
Early Hair-grass.
Dry places; Apr.-June. A.

3. *A. discolor* Thuill.
Marsh Hair-grass.
Wet places; bogs; July-Sept. P.

4. *A. flexuosa* L.
Wavy Hair-grass.
Rocks; heaths: June-Aug. P.

5. *A. canescens* L.
Grey Hair-grass. R.
Sandy coasts: June-Aug. P.

6. *A. cæspitosa* L. VC.
Tufted Hair-grass.
Meadows; pastures; thickets:
June-Aug. P.



awn thickened at apex,
ring of hairs towards
middle CN 4-12 in.



Leaves *rolled*, ligule *not*
lobed; glumes *equal*
CA, C;



Leaves *flat*, ligule *cut at apex* CE; glumes *unequal* CS, AC;
awn fine; 2-4 ft.



Awns *shorter*
or scarcely
longer than
glumes CA, CS.

CONIFERÆ.

Seeds enclosed in dry cones EX.

Scales of cone many; leaves not pressed against stem.

Leaves attached singly L, P.

Leaves clustered, on dwarf branches L. } Leaves soft, falling each autumn; cones small.

Leaves not clustered, on long branches P.

Leaves almost 4-angled E; cone falling as a whole EX.

Leaves almost flat A; scales of cone falling separately, therefore no cones found beneath the trees.

Scales of cone few; leaves pressed against stem.

Seeds enclosed in a fleshy covering.

Fleshy covering formed by scales of cone; leaves in whorls of 3, prickly J.

Fleshy covering an aril; leaves not in whorls, not prickly T.

V. *Pinus* L., p. 223.
Pine.

I. *Larix* Mill., p. 222.
Larch.

II. *Cedrus* Barl., p. 223.
Cedar.

III. *Picea* Don, p. 223.
Spruce.

IV. *Abies* Salisb., p. 223.
Fir.

VI. *Cupressus* L., p. 223.
Cypress.

VII. *Juniperus* L., p. 223.
Juniper.

VIII. *Taxus* L., p. 223.
Yew.

*1. *L. europæa* DC.
Larch.
Planted: Apr.-May P

I. *Larix* Mill. *Larch*.—(Fig. L, above.)

Tree; branches spreading or pendulous; leaves bright green, almost flat, deciduous; cones oval, scales thin.

II. *Cedrus* Barrl. *Cedar*.—

Tree, evergreen; cones 3-5 in. long, 2-3 in. across, stalked, brown when ripe; scales of cone thin, eventually falling away.

III. *Picea* Don. *Spruce*.—(Figs. P, E, EX, above.)

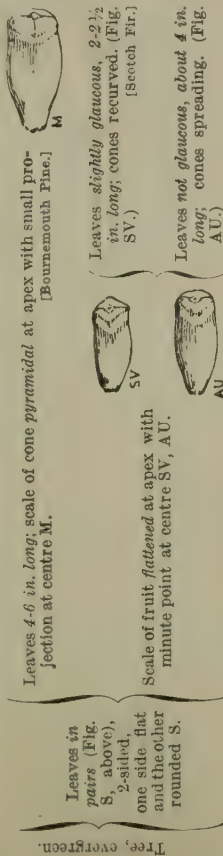
Tree; branches spreading or drooping; leaves evergreen, seldom glaucous; scales of cones thin. [Spruce Fir.]

IV. *Abies* Salisb. *Fir*.—(Fig. A, above.)

Tree; branches spreading or almost drooping; leaves evergreen, 2 white lines on under surface.

V. *Pinus* L. *Pine*.—

Leaves in groups of five, 3-sided; cones slender, cylindrical, bent, 4-5 in. long, 1 in. across.



VI. *Cupressus* L. *Cypress*.—

Tree; leaves small, evergreen, closely imbricated around stem; cones oval, about 1 in. across, scales peltate.

VII. *Juniperus* L. *Juniper*.—(Fig. J, above.)

Shrub; leaves glaucous, evergreen; cones fleshy, 1-3 seeded, bluish-black, resembling a small berry.

VIII. *Taxus* L. *Yew*.—(Fig. T, above.)

Tree; leaves evergreen, often spreading in 2 ranks; aril red, partly enclosing one seed.

1. **C. Libani** Barrl.
Cedar of Lebanon.
Sometimes planted: Sept.-Oct.
P.

1. **P. excelsa** Lam. ♂
Norway Spruce.
Planted: May-June. P.

1. **A. pectinata** DC. ♂
Silver Fir.
Planted: Apr.-May. P.

1. **P. Strobilus** L.
Weymouth Pine.
Planted: May-June. P.

*2. **P. Pinaster** Ait. ♂
Cluster Pine.
Planted and naturalised: May-June. P.

3. **P. sylvestris** L. ♂
Scots Pine.
Mountains; planted: May-June.
P.

4. **P. austriaca** Hæss.
Austrian Pine.
Sometimes planted: May-June.
P.

1. **C. fastigiata** DC.
Cypress.
Sometimes planted: Apr.-May.
P.

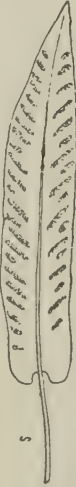
1. **J. communis** L. ♂
Common Juniper.
Dry hilly places: Apr.-May. P.

1. **T. baccata** L. ♂
Common Yew.
Woods; hedges: Mar.-Apr. P.

POLYPODIACEÆ.

The Ferns bear clusters of sporangia, known as sori, on the under surface of the frond: in many of the genera, the sorus in its young state is protected by a membrane. For the determination of the Fern, younger and older fronds should be examined.

Fronds entire S; sori long, linear, parallel S.



I. *Scolopendrium* Sm., p. 226.
Hart's-tongue.

Fronds not narrower at base V;



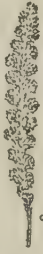
sorus rounded, not covered by a membrane VU.



II. *Polypodium* L., p. 226.
Polypody.

Leaves deeply cut into segments V, O, B.

Back of frond covered with ruddy shining scales O; segments rounded O.



III. *Ceterach* Willd., p. 226.
Ceterach.

Fronds narrower at base O, B.

Back of frond not covered with ruddy shining scales; outer fronds barren B; inner fronds with very narrow fertile segments.



IV. *Blechnum* L., p. 226.
Blechnum.

Sori linear or oblong, sometimes uniting when mature; plant about 2-12 in. (See Figures, p. 227).

VII. *Asplenium* L., p. 227.
Spleenwort.

Stalk and axis of frond blackish-brown; plant delicate.

Stalk and axis of frond green; plant not delicate.

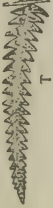
Frond solitary, 2-6 ft., terminal divisions almost entire P; sori under rolled margin of segments A.



VI. *Adiantum* L., p. 226.
Maidenhair.

V. *Pteris* L., p. 226.
Pteris.

Fronds several, 12 ft., segments entire T; sori not under rolled margin.



midrib P. of frond A.

not scaly at base.

Fronds all similar.

[See XI. Aspidium.]

Fronds

Fronds compound, principal divisions free as far as Sori rounded or becoming rounded AA. F., or protected by margin

Outer fronds barren,
inner fronds fertile C;
plants delicate.

Segments of frond pointed; sori under rolled margin C.



XII. *Allosorus* Bernh.,
p. 229.
Allosorus.

Segments of frond rounded at apex; sori nearly covering under surface, not protected by a membrane.

XIII. *Grammitis* Sw.,
p. 229.
Grammitis.

Fronds mostly having brownish scales at base P.

Sori not protected by a membrane.

Fronds triangular in outline or hairy on both surfaces; sori not surrounded by hair-like scales. [See II. Polypodium.]

Fronds lanceolate in outline; sori surrounded by hair-like scales.

IX. *Woodsia* R. Br.,
p. 228.
Woodsia.



Upper divisions of frond sickle-shaped AC; membrane protecting sorus attached at its centre AA'.

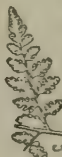


XI. *Aspidium* Sw.,
p. 228.
Aspidium.

Sori protected by a membrane, at least when young.

Divisions of frond not sickle-shaped; membrane protecting sori attached laterally FI, F.

Longest divisions of frond not more than 3 times longer than broad C; teeth rounded C; membrane protecting young sorus attached at base F.

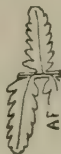


X. *Cystopteris* Bernh.,
p. 228.
Blauder Fern.



Longest divisions of frond more than 3 times longer than broad.

Segments deeply cut; teeth not very acute AF; young sori oval.



VIII. *Athyrium* Roth,
p. 227.
Athyrium.

Segments not deeply cut, or teeth very acute; sori rounded.

XI. *Aspidium* Sw.,
p. 228.
Aspidium.



I. *Scolopendrium* Sm. *Hart's-tongue*. (Fig. S, p. 224.)

Underground stem often covered with remains of old leaf bases; sori double, membranes opening towards each other.

II. *Polypodium* L. *Polypody*.—

Frond *deeply segmented* V; secondary veins not passing as far as apices of segments, 4-16 in.



Fronds *triangular* in outline D, glabrous, bi-pinnate, 4-16 in.



Fronds *compound* D, PH; secondary veins passing to margin.

Fronds *ovate* in outline, both surfaces hairy, divisions long PH, pinnate; 8-18 in.



III. *Ceterach* Willd. *Ceterach*.—(Fig. O, p. 224.)

Fronds numerous, tufted; sori linear, not protected by a membrane, concealed by chaffy scales; 2-6 in. [Rusty-back Fern.]

IV. *Blechnum* L. *Blechnum*.—(Fig. B, p. 224.)

Barren fronds tufted, persisting during winter; fertile fronds with segments curving downwards late in season; $1\frac{1}{2}$ -1 $\frac{1}{2}$ ft. [Hard Fern.]

V. *Pteris* L. *Pteris*.—(Figs. P, A, p. 224.)

Underground stem horizontal, deeply embedded in the soil; frond annual, very large, much divided; a cross-section near the base of the main stalk has the appearance of a double eagle; 2-6 ft. [Blakes.]

VI. *Adiantum* L. *Maidenhair*.—

Fronds at least twice divided; segments bright green, glabrous, narrower at base than apex; stalks slender; 4-12 in.

1. *S. officinale* Sm. ☞
Hart's-tongue. C.
Shady rocks, walls, banks:
June-Oct. P.

1. *P. vulgare* L. ☞
Common Polypody. C.
Sheltered banks, walls, trees:
June-Oct. P.

2. *P. Dryopteris* L.¹
Oak Fern.
Dry woods: June-Oct. P.

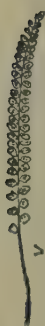
3. *P. Phegopteris* L.²
Beech Fern.
Damp shady places: June-
Sept. P.

1. *C. officinarum* Willd.
☞
Ceterach.
Walls; rocks: May-Oct. P.

1. *B. Spicant* Roth
Blechnum. C.
Moist woods: June-Sept. P.

1. *P. aquilina* L. ☞
Bracken. VC.
Woods; heaths: July-Oct. P.

1. *A. Capillus-Veneris* L.
Maidenhair. VR.
Rocks: June-Sept. P.

VII. *Asplenium* L. *Splenwort*.—

Stalk of frond *green*, brown only at base, very narrowly winged; 2-8 in.

Lower divisions of frond *pinnate* V, T. usually *smaller*.



Divisions of frond *thin*, nerves not thickened at apex, bases *equal* T; 2-8 in.

Divisions of frond *thick*, larger, nerves slightly thickened at apex, bases *unequal*; 4-12 in.

Fronds usually *bi-pinnate*; stalks green; 4-10 in.

Divisions of frond 2-3, narrow, pointed at base and apex AS; stalks green; sori linear; 2-6 in.



Principal parts of frond *gradually* narrowed towards apex, much divided AN; stalk blackish, shining; 4-12 in.

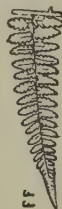


Lower divisions of frond *not smaller* AS, AN, RM, G. more than 2-3 divisions.

Principal parts of frond *not pointed*, *not much* divided RM, G. Stalks *green*; segments thick, linear RM; 2-4 in. Stalks *brown at base*; divisions thin, broad at apex, narrow at base G; 2-6 in.

VIII. *Athyrium* Roth. *Athyrium*.—(Fig. AF, p. 225.)

Fronds tufted, oblong-lanceolate, principal divisions long FF, stalks green; membrane covering sori fringed; 1½-4 ft.



1. *A. viride* Huds. *Green Splenwort*. Rocks: June-Sept. P.

2. *A. Trichomanes* L. *Common Splenwort*. C. Walls; rocks: May-Oct. P.

3. *A. marinum* L. *Sea Splenwort*. P. Rocks; walls: June-Sept. P.

4. *A. lanceolatum* Huds. *Lanceolate Splenwort*. R. Moist rocks: June-Sept. P.

5. *A. septentrionale* Hoffm. *Forked Splenwort*. R. Rocks; walls: June-Oct. P.

6. *A. Adiantum-nigrum* L. *Black Splenwort*. C. Rocks; walls; banks: June-Oct. P.

7. *A. Ruta-muraria* L. *Wall-rue*. Walls; rock Jan.-Dec. P.

8. *A. germanicum* Weiss. *German Splenwort*. VR. Rocks: June-Oct. P.

1. *A. Filix-foemina* Roth. *Lady Fern*. VO. Moist shady places; woods: June-Sept. P.

1. *Var. calcareum* Sm.: fronds stiff, hairy, glandular, leathery; underground stem thick; on limestone rocks.—2. *P. rheticum* L. fronds bi-pinnate, Loc.

IX. *Woodsia* R.Br. *Woodsia*.—

- { Fronds *pinna*te; divisions rounded, almost entire; slightly hairy when young, 2-6 in.
 Fronds tufted. }
 { Fronds *bi-pinna*te or divisions deeply lobed, margins very hairy; 2-6 in.

1. *W. hyperborea* R.Br.
Northern Woodsia. VR.
 Rocks: July-Sept. P.
 2. *W. ilvensis* R.Br.
Alpine Woodsia. VR.
 Rocks: July-Sept. P.

X. *Cystopteris* Bernh. *Bladder Fern*.—

- Fronds thin, soft, stalk fairly long; membrane
 protecting sorus
 falling early. } Fronds *tufted*, *ovate-lanceolate*, lower divisions shorter, sori running together later; underground stem short, thick; 4-16 in. (Figs. C, F, p. 225.)
 Fronds *not tufted*, *triangular*, lower divisions longer; sori remaining distinct; underground stem very long, slender; 4-12 in.

1. *C. fragilis* Bernh.
Brittle Bladder Fern.
 Damp or shady rocks: June-Sept. P.
 2. *C. montana* Bernh.
Mountain Bladder Fern. VR.
 Moist rocks: July-Sept. P.

XI. *Aspidium* Sw. *Aspidium*.—

- Stalk of frond *not scaly*; segments of fronds entire, margins reflexed when old; underground stem narrow, long; 1-2 ft. (Fig. T, p. 224.)

1. *A. Thelypteris* Sw.
Marsh Shield-fern.
 Wet places: June-Oct. P.

Fronds *bi-pinna*te; 1-2 ft. (Figs. AC, AA, p. 225.)

2. *A. aculeatum* Sw.

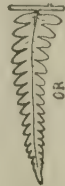
Prickly Shield-fern.

- Shady places: June-Sept. P.

3. *A. Lonchitis* Sw.

Holly Fern. Loc.

Rocks: June-Sept. P.



OR



PO

Segments of fronds *entire* PO, OR;
 sori near margin PO, 1½-3 ft.

Under surface
 of frond with
 dots or stalked
 glands, yellow
 and fragrant.

Segments of fronds *toothed*, teeth acute; covered below with minute stalked glands; 1-2 ft.

4. *A. Oreopteris* Sw.

Mountain Fern.

Heaths; open woods: July-Sept. P.

5. *A. rigidum* Sw.

Rigid Fern. R.

Rocks: June-Sept. P.

Stalk of frond

Upper divisions of frond not stickle shaped; membrane of sorus attached at its

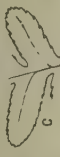
Largest main divisions of frond 4-7 times longer than broad FM; segments toothed particularly at apex F; 2-4 ft.



Segments of frond not acutely toothed O, distinctly continuous at their base C; 8-24 in.



Segments acutely toothed S, scarcely continuous at their base S; 1-2 1/2 ft.



Largest main divisions of frond 2-3 times longer than broad; segments toothed all round C, S.



6. *A. Filix-mas* Sw. H
Male Fern, C.
Woods; damp banks: June-Sept. F.

7. *A. cristatum* Sw.
Crested Fern, R.
Wet shady places: June-Aug. P.

8. *A. spinulosum* Sw.
Broad Fern, C.
Moist woods June-Sept. P.

XII. *Allosurus* Bernh. *Allosurus*.—(Fig. C, p. 225.)

Fronds tufted, much divided; barren ones flat, fertile ones revolute at margins; stalks broad; 4-12 in. [Parsley Fern.]

1. *A. crispus* Bernh.
Rock Bracken.
Rocks: July-Aug. P.

XIII. *Grammitis* Sw. *Grammitis*.—

Fronds tufted; segments broad, short; stalks reddish-brown, shining; 2-6 in. [Jersey Fern.]

1. *G. leptophylla* Sw.
Small Grammitis, V.R.
Moist shady banks: Mar.-May. A.

HYMENOPHYLLACEÆ.

Fronds bi-pinnate or tri-pinnate; membrane protecting sorus cup-shaped.

I. *Trichomanes* L., p. 230
Bristle Fern.



II. *Hymenophyllum* L., p. 230.
Filmy Fern.

I. *Trichomanes* L. *Bristle Fern*.—

Underground stem long; stalks of fronds brown throughout, winged; segments obtuse; axis of sorus projecting slightly, bristle-like; 4-12 in.

II. *Hymenophyllum* L. *Filmy Fern*.—

Segments of frond *spreading*; membrane of sorus *toothed*; 1-3 in. (Fig. H, p. 229.)

Underground stem long, slender; stalks and nerves of fronds brown.

Segments of frond *deflexed*; membrane of sorus *entire*; 1-3 in.

OSMUNDACEÆ.

I. *Osmunda* L. *Osmund*.—

Fronds tufted, bipinnate, lower main divisions barren R, upper main divisions fertile RE; 2-6 ft.

(Flowering Fern.)



OPHIOGLOSSACEÆ.

Barren part of frond *entire* OV; fertile part *narrow*, long OV; sporangia embedded.

Barren part of frond *pinnate* L; fertile part *branched* L; sporangia free, sessile.

I. *Ophioglossum* L. *Adder's-tongue*.—

Barren part of frond *oval*, not narrowed into a stalk; 2-12 in. (Fig. OV, above.)

Barren part of frond *lanceolate*, gradually narrowed into a stalk; 1-2 in.

II. *Botrychium* Sw. *Moonwort*.—(Fig. L, above.)

Barren part of frond with thick, half-moon shaped divisions; sporangia marginal; 2-8 in.

1. *T. radicans* Sw.

European Bristle Fern. VR. Wet sheltered rocks: June-Oct. P.

1. *H. tunbridgense* Sm.

Tunbridge Filmy Fern. Loc.

Moist shady rocks: July-Oct. P.

2. *H. peltatum* Desv.

Peltate Filmy Fern. Loc.

Moist shady rocks: July-Oct. P.

1. *O. regalis* L. ✠

Royal Fern. Loc.

Boggy places: June-Aug. P.

I. *Ophioglossum* L.,

p. 230.

Adder's-tongue.

II. *Botrychium* Sw.,

p. 230.

Moonwort.

1. *O. vulgatum* L.

Adder's-tongue.

Moist pastures: May-July P.

2. *O. lusitanicum* L.

Small Adder's-tongue. VR.

Turfy places near sea: Jan.-Apr. P.

1. *B. Lunaria* Sw.

Moonwort.

Dry pastures: May-Aug. P.



EQUISETACEÆ. Some of the species have two kinds of stems: fertile stems appearing in spring, and barren stems usually later in the season.
I. Equisetum L. Horse-tail.—

Sheaths *large* (Fig. T, natural size), 20-30 toothed, barren stems 2-6 ft., branched, green;



fertile stems reddish-brown, unbranched; 4-16 in.

Teeth of sheaths 5-7 mm. long, distant from stem (S, A, natural size.)

Sheaths 3-4 toothed S; fertile and barren stems present at same time, almost similar, fertile ones deflexed at base; 4-32 in.
Sheaths about 8-toothed A; fertile stems unbranched AV, 4-8 in.; barren stems branched AR, 1-2 ft.



Sheaths less than 1 cm. broad.

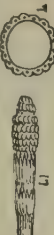
Teeth of sheaths 2-3 mm. long, in more or less close contact with stem (P, natural size.)

Spike of sporangia obtuse II.

Teeth white and membranous at margins P; stems deeply furrowed, furrows few (PA, stem cut across); 1-2 ft.



Teeth not or scarcely membranous LI; stem furrowed, furrows 15-25, not deep L; 2-4 ft.



Sheath adpressed to stem even at apex H; stems rough; 1-3 ft. [Dutch-rush.]



Spike of sporangia pointed H.

Sheath slightly enlarged above R, V. Diameter of cavity in hollow part of stem much greater than that of solid part; 1-3 ft.



Diameter of cavity in hollow part of stem equal to that of solid part; 4-16 in.



1. **E. maximum** Lam.
Great Horse-tail.
Wet places: Mar.-Apr. P.

2. **E. sylvaticum** L.¹
Wood Horse-tail.
Wet shady places: Apr.-May. P.

3. **E. arvense** L.
Field Horse-tail. VC
Damp places: Mar.-May P.

4. **E. palustre** L. H
Marsh Horse-tail. C.
Wet places: June-July. P.

5. **E. limosum** L.
Smooth Horse-tail. C.
Wet places: June-July. P.

6. **E. hyemale** L. H
Rough Horse-tail.
Wet places: July-Aug. P.

7. **E. trachyodon** A. Br.
Long Horse-tail. R.
Wet sandy places: July-Aug. P.

8. **E. variegatum** Schl.
Variegated Horse-tail.
Wet sandy places: July-Aug. P.

1. *P. pratense* Ehrh. [Shady Horse-tail] has many teeth and simple branches; moist shady places; R.

LYCOPODIACEÆ. The various species of this N.O. are common in the north of Europe where their spores are gathered for medicinal purposes.

I. Lycopodium L. Club-moss.—

- Plant 2-8 in. { Branches forked several times S; stems erect; leaves all similar; 2-8 in.
- { Branches simple I; stems creeping; leaves with sporangia in their axils broader at base, forming a spike I; 2-8 in.



1. **L. Selago L.**

For Club-moss.

Hilly heaths: July-Oct. P.



2. **L. inundatum L.**

Marsh Club-moss.

Boggy heaths: July-Oct. P.

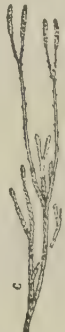


3. **L. complanatum L.**

Compressed Club-moss.

VR.

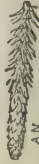
Heaths; shady places: July-Oct. P.



4. **L. clavatum L. ✠**

Common Club-moss.

Hilly heaths: July-Oct. P.



5. **L. annotinum L.**

Interrupted Club-moss. R.

Heaths; woods: June-Aug. P.



6. **L. alpinum L.**

Alpine Club-moss.

Pastures; heaths: June-Aug. P.

1. **S. spinulosa A.Br.**

Common Selaginella.

Moist rocks and pastures: June-Oct. P.

Leaves not having a long hair-like apex, in 2-4 regular rows C; leaves leathery; erect branches not hidden by the leaves; 2-2½ ft.



Spikes 2-6 at top of a common peduncle CO, C.

Leaves with a long hair-like apex CL; leaves soft; erect branches hidden by the leaves; 2-2½ ft.



Leaves spreading AN, or reflexed, finely toothed; 1½-2 ft.

Leaves adpressed against stem AL, entire; 2-3 ft.

Spikes solitary, sessile at apices of leafy branches AN, AL.

SELAGINELLACEÆ.

I. Selaginella P.B. Selaginella.—

Plant moss-like; stems prostrate, much forked; leaves spreading, lanceolate; fertile branches erect; spikes with slightly toothed leaves; 1-5 in.

SALVINIACEÆ.

I. *Azolla* Lam. *Azolla*.—

Plant free-floating, fugacious; Stem often *forked*; leaves distinctly dotted.
 length variable; upper parts
 of branches resting on sur- {
 face of water. } Stem *irregularly branched*; leaves faintly dotted.

- *1. *A. caroliniana* Willd.
 R.
 Still water: June-Oct.
 *2. *A. filiculoides* Lam.
 R.
 Still water: June-Oct.

MARSILIACEÆ.

I. *Pilularia* L. *Pillwort*.—(Fig. Pl, p. XXXIV.)

Underground stem slender, creeping, sometimes very long; sporangia enclosed in globular, pill-like cases;
 leaves filiform, erect; 1-4 in.

1. *P. globulifera* L.
Creeping Pillwort.
 Margins of shallow water:
 June-Sept. P.

ISOETACEÆ. The plants of this N.O. are often not noticed because of their external resemblance to grasses not in flower.

I. *Isoetes* L. *Quillwort*.—(Fig. I, p. XXXIV.)

Plant *growing in damp soil*, dark or bright green; old leaf-bases persistent; 1-3 in.

1. *I. hystrix* Dur. R.
 Sandy hollows: May-July. P.

Plant *aquatic*; Leaves *dark green*, 3-7 mm. *broad*; larger spores with blunt tubercles; 2-6 in.
 leaf-bases

not persistent. { Leaves *pale green*, 1-2 mm. *broad*; larger spores with acute tubercles; 2-6 in.

2. *I. lacustris* L. Loc.
 Shallow water: May-July. P.

3. *I. echinospora* Dur.
 R.
 Shallow water: May-July. P.

INTRODUCTION TO THE STUDY OF PLANTS

I

THE DIFFERENT PARTS OF A PLANT.

1. The three chief organs of the plant.—Let us take two very common plants in flower, the Buttercup, found on most banks or roadsides (Fig. A) and the Cowslip, either represented by the forms known as Polyanthus and grown in most gardens in the spring, or by the wild plant that we find in the meadows or the woods (Fig. B). Dig up a whole plant in



Fig. A.—Buttercup :
the whole plant.



Fig. B.—Cowslip :
the whole plant.

each case, and remove the earth which would otherwise prevent a thorough examination of the underground parts.

Taking the Buttercup (Fig. A) first, we see at its base some elongated organs *r* without any leaves on them. These are the *roots*. Above these another elongated organ *t* rises upwards above ground and bears leaves ;

this is a *stem*. The *leaves* are the flat green structures *f* which are joined to the stem by their bases. The leaf differs from a stem or a root in that it has obviously a right and a left margin, and an upper and an under surface, whilst a stem or a root if turned round and round presents always the same appearance with no right or left margin, no upper or under surface. The stem (*t*, Fig. A) gives off several secondary stems or branches which end in flowers.

If we now examine the Cowslip (Fig. B), we can distinguish, as in the Buttercup, roots *r*, and a stem *ts*, to which a number of leaves *f* are attached below the level of the soil. The main flower stalk *ta* rises erect above the ground to bear the flowers.

We have thus defined the three organs of the plant:—

1. The *root* which does not bear leaves, commonly takes a downward direction, and can continue to grow in length for a very long time.
2. The *stem* which bears the leaves, commonly grows upwards, and can also continue its growth for a long time.
3. The *leaf* which is attached to the stem, has a right and a left margin, and an upper and under surface. The elongation of the leaf usually comes to an end rather soon, directly it has acquired its final shape.

What, in most cases, are the chief functions of these three organs?

The root takes in water charged with mineral substances present in the soil. This absorption takes place through numerous little hairs which cover its surface a little above its tip. Every one knows that if the roots of a plant are kept without water, the plant will generally soon die.

The green leaf also serves to nourish the plant. The source of its food material is the surrounding air and to perform its function, it is necessary that the leaf shall be in the light. It is well known that if a plant is put in a dark cupboard, it will soon die, even if the roots are watered.

The function of the stem is to serve as a means of communication between the leaves and the roots. It is through the stem that the liquid taken in by the roots is conveyed to the leaves, and that the food of the plant is distributed to all its parts.

2. The flower.—The flower is made up of a certain number of small leaves of peculiar shapes, and gathered close together at the end of a branch. By examining the flower of the Buttercup, we can easily see what are the various organs that make up this important part of the plant.

Outside we find five little green leaves; these are the *sepals* (*s*, Fig. C; one of them is shown in Fig. D). The sepals collectively form the outermost envelope of the flower, known as the *calyx*.

Inside these five sepals we find five other leaves, which in the Buttercup are yellow. These are the *petals* (*p*, Fig. C; one of them is shown in Fig. E). Collectively the petals form the inner envelope of the flower, known as the *corolla*.



Fig. C.—Buttercup: flower cut vertically through the middle.

If we remove the two floral envelopes by taking off all the sepals and all the petals, we shall see a number of threads ending in little swollen oval parts. These are the *stamens* (E, Fig. C). Each stamen is made up of a slender portion, called the *filament* (f, Fig. F) which is surmounted by the



Fig. D. — Buttercup: a detached sepal.

Fig. E. — Buttercup: a detached petal.

Fig. F. — Buttercup: a detached stamen.

Fig. G. — Buttercup: a detached carpel cut vertically.

swollen part known as the *anther* (a, Fig. F). The anther is the essential portion of the stamen; when ripe, it opens to liberate a fine powder known as *pollen*, which, as we shall see later, is indispensable in bringing about the formation of the seed.

Lastly, if we remove the stamens carefully, we shall find the *carpels* (c, Fig. C) grouped at the centre of the flower. These are the little green structures which collectively make up the *pistil*. Each carpel (Fig. C) has at its base a chamber, called the *ovary* (o, Fig. G), enclosing a little white oval body known as the *ovule* (ov, Fig. G): the ovary is surmounted by an elongated portion (s, Fig. G), the *style*, terminating in a sticky or viscid part called the *stigma* (sg). It is this viscid stigma which retains on its surface the pollen that escapes from the stamens; it is only after the pollen has reached the stigma that the ovule can change into a seed and the ovary into a fruit.

Summary.—The flower is generally made up of two principal parts, the pistil and the stamens, both essential for the formation of the fruit; usually the flower also has accessory parts (the calyx and corolla), which protect the pistil and stamens during their development and often attract insects.

If we now take the flower of the Cowslip (Fig. H), we shall find the various parts we have just made out in the flower of the Buttercup, though with different shapes.

The calyx is seen on the outside; it is inflated and has its five sepals (s, Fig. H) united to one another except at the top, so as to form a sort of tube ending in five teeth (Fig. I). Inside this is the coloured corolla (Fig. J), the petals of which, even more united to one another than are the sepals of the calyx, form a long tube spreading out at the top into five divisions corresponding to the five petals (p, Fig. H). If we cut the flower lengthways through the middle (Fig. II), we can see that the stamens are in this case joined by their filaments to the corolla, almost throughout the whole of their length.

Lastly, in the centre of the flower is the pistil composed of carpels completely united together forming a single ovary with numerous ovules

(o, Fig. H), surmounted by a single elongated style terminating in one slightly swollen viscid stigma.

3. The fruit and the seeds.—The chief function of the flower is to lead to the formation of the seed. When pollen has been transferred to



Fig. H.—Cowslip: Flower cut longitudinally through the middle.



Fig. I.—Cowslip: Calyx detached.



Fig. J.—Cowslip: Corolla detached.

the stigma, the various parts of the flower generally wither, with the exception of the ovary which starts further growth. Gradually the ovary changes into the *fruit*; and meanwhile the ovules inside it also enlarge and become the *seeds* enclosed in the fruit.

In the Buttercup, where each carpel is distinct and only encloses a single ovule, the pistil produces as many fruits as there are carpels; each fruit is made up of a single carpel which has enlarged, become dry (A,



Fig. K.—Buttercup: collection of fruits.



Fig. L.—Cowslip: fruit.

Fig. K), and encloses a seed. Each of the fruits (ripened carpels) remains unopened and falls to the ground with its seed inside it.

In the Cowslip, where the carpels are joined and the ovary contains a number of ovules, the pistil produces a single fruit enclosing a number of seeds. This fruit opens at the top by teeth and so allows the seeds to escape from it (Fig. L).

A single seed falling to the ground can develop and sprout, producing a primary root, a primary stem and leaves, thus forming a young plant resembling in all essential particulars the plant that produced it.

II

THE GROUPING OF PLANTS

4. Classification of plants : Species, Variety.—Distinct plants, like animals, have received different names and, to facilitate their study, they have been arranged in groups. The arrangement of the whole of these groups to show their relation one to another is known as the *classification of plants*.

Plants resembling one another very much are called by the same name and said to belong to the same *species*.

It was stated above that, on germination, the seeds of a plant develop into new plants similar to the one which produced them; from this it follows that a plant and its seedlings belong always to the same species.

The *species* may quite broadly be said to consist of all those plants which resemble one another more than they resemble other plants. Thus, two Sweet Briar bushes resemble each other much more than they resemble the Bramble or even the Dog Rose; the two Sweet Briar bushes are said to belong to *the same species*.

The characters common to all the plants of the same species are included in a description of this species. A comparison of these descriptions, as given in the keys of this Flora, leads to the determination of the species of a particular plant.

Differences less important than those separating two species, determine the *varieties* of a species. Thus amongst the Sweet Briars there are some with the leaves only faintly aromatic and the styles almost glabrous, and these plants are said to belong to the *variety* "*micrantha*" of the species "*rubiginosa*" (p. 58).

5. Genus, Natural Order, Class.—The number of species is very great and, for the convenience of classification, those which show considerable resemblance one to another are united into one group called a *genus*.

Thus the Sweet Briar, the Dog Rose, and the Burnet Rose belong to *the same genus, Rose*. They show more characteristics common to all of them than common to them and the Bramble or Sloe.

The generic name is substantive, while the specific name is adjectival. Both are usually used in naming a plant, and, in English, the specific name is placed before the generic. To distinguish certain species of the genus *Rose*, they are spoken of as the *Burnet Rose*, the *Downy-leaved Rose*, the *Trailing Rose*, and the *Dog Rose*.

It is necessary to make use of some such system of nomenclature to indicate clearly a particular plant as the common names often vary throughout the country, and also as many plants have no common names.

Botanists by preference use the Latin language for designating genera and species in order to facilitate international scientific intercourse. The genus *Rose* is called *Rosa* and its species named above in English are in descriptive works named *Rosa spinosissima*, *Rosa tomentosa*, *Rosa arvensis*, *Rosa canina*; the generic name is placed first in Latin.

The number of genera also is very great, and those which most resemble one another are brought together in large groups, each one known as a *natural order*.

For example, the genera *Prunus*, *Rubus*, *Rosa*, *Fragaria* comprise plants presenting a certain number of resemblances in the shape and structure of their flowers, fruits and leaves; they therefore belong to the same natural order *Rosaceæ*.

In the same way, the natural orders are united into higher groups known as *classes*, e.g. dicotyledons.

6. The principal groups of plants. — The plants so far named all have flowers and reproduce themselves by seeds; plants having these characters belong to the great *division* of *Flowering Plants* or *Phanerogams*.

There is another great division comprising the plants which never have flowers and produce no seed; this *division* is that of the *Flowerless Plants* or *Cryptogams* and to it belong the Ferns, Mosses, Fungi and Algæ. The flowerless plants usually form small bodies, called *spores*, scarcely visible if at all to the naked eye; the spores germinate and give rise to new plants.

Two *sub-divisions* are recognised in the Phanerogams; they are the *Angiosperms* and the *Gymnosperms*. The latter have naked seeds, and include the Pine, Fir, Yew, and Juniper.

The Angiosperms have their seeds enclosed in ovaries, and form by far the greater of the two sub-divisions. They are grouped in two *classes* : —

1, The *Monocotyledons* or plants with one cotyledon, so called because the seed contains only one food-leaf or cotyledon.

2. The *Dicotyledons* or plants with two or more cotyledons in their seeds.

The Monocotyledons are generally recognised by the parallel venation of their leaves, and by the similar parts of their flowers being arranged in threes; e.g. Tulip, Lily of the Valley, Wheat.

The Dicotyledons are easily known by the netted venation of their leaves, and by the similar parts of their flowers being arranged in fours or fives; e.g. Wallflower, Strawberry, Harebell.

The two great divisions, Phanerogams and Cryptogams are analysed in the following table:—

Flowering plants: PHANEROGAMS.	Ovules enclosed in an ovary: ANGIOSPERMS.	Seed with 2 or more cotyledons; leaves net-veined; similar parts of flower in 4's or 5's.	} Dicotyledons e.g. Wallflower, Strawberry, Harebell.
		Seed with 1 cotyle- don; leaves paral- lel-veined; similar parts of flowers in 3's or 6's.	
	Ovules naked, i.e. not enclosed in an ovary.....	GYMNOSPERMS e.g. Pine, Fir, Yew.	

	Plants with true roots.....	PTERIDOPHYTES e.g. Ferns, Horse-tails.
Flowerless plants:		
CRYPTOGAMS.	Plants not having true roots	BRYOPHYTES e.g. Mosses, Liverworts.
	Stem and leaf-like parts usually present	THALLOPHYTES e.g. Algæ, Fungi, Lichens.
	Stem and leaf-like parts not distinct.....	

A glossary of the simple descriptive terms used in this Flora will be found on the following pages. The beginner should look through this glossary in the initial stages of his study, and should consult it whenever the need arises during the determination of a plant.

GLOSSARY

OF TERMS USED IN DESCRIBING PLANTS.

A

Aborted.—An aborted organ is one that is not developed in one plant to the extent that it is in analogous plants.

Addressed (fruits).—Erect, pressed closed to stem or other part of plant.

Adventitious (roots).—Roots springing from a stem whether aerial, underground, or in water.

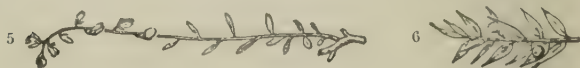
EXAMPLES: 1, adventitious roots on an aquatic stem; 2, 3, 4, adventitious roots on underground stems.



Aerial.—Developed above the soil, such as aerial stems so called in contradistinction to underground stems developed below the soil.

Alternate.—Attached to stem singly at different levels or nodes.

EXAMPLES: 5, 6, stems bearing respectively alternate leaves and branches.



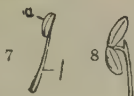
Amplexicaul.—Base of leaf clasping the stem.

EXAMPLES: Fig. G, p. 8; Fig. OL, p. 104.

Androecium.—Collective name for the stamens.

Annual (indicated by the abbreviation A.).—Plant living not more than one season; usually recognised by its slender roots and absence of underground stem.

Anther.—Part of the stamen enlarged and containing the pollen (*a*, Fig. 7).



The anther is usually divided into two parts called *anther-lobes*.

EXAMPLES: 7, stamen with anther-lobes *a* parallel and borne on a filament 8 stamen with anther-lobes diverging.

Auricles.—Lateral lobes at base of leaf-blade.

Awn.—Stiff hair or bristle attached to the apex or back of an organ.

EXAMPLES: 9, 10, terminal awns; 11, dorsal awn.



B

Beak.—Prolongation, more or less narrow, at apex of a fruit.

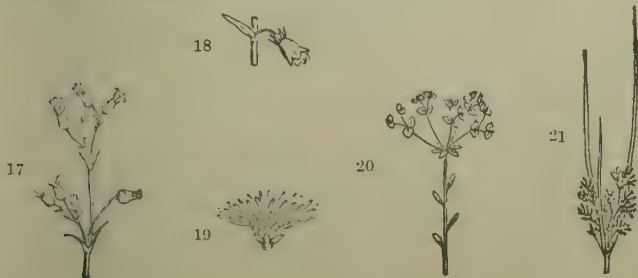
EXAMPLES: 12, beak curved; 13, beak flattened; 14, beak long and terminated by a pappus; 15, 16, beak 2-toothed.



Biennial (indicated by the abbreviation B.).—Plant living during two successive seasons; usually produces a short stem, leaves and roots during first season, flowers and fruits during second season, and then dies.

Bract.—Leaf borne near the flowers, usually at base of pedicel.

EXAMPLES: 17, bracts opposite; 18, bract at base of pedicel; 19, bracts forming an involucre below capitulum; 20, bracts forming an involucre below umbel; 21 bracts much elongated at base of inflorescence.



Bulb.—Swollen part formed most commonly by base of stem (Fig. G) surrounded by thick scale-leaves or leaf-bases.



C

Calyx.—Outermost envelope of flower made up of particular leaves called *sepals* either separate, or more or less joined together. The calyx may also be more or less united to other parts of the flower. When only one envelope is present in the flower, it is still called a calyx. The sepals are generally green, but sometimes are coloured and resemble petals.

EXAMPLES: 22, sepals separate below a corolla; 23, sepals joined throughout the lower part of their length; 24, sepals joined except at apex; 25, calyx detached, sepals joined except at apex; 26, calyx resembling corolla, the two envelopes together termed a *perianth*.



Calyx-tube.—Tube formed by united sepals.

EXAMPLES: 27, calyx tubular at base; 28, calyx split open and laid flat.



Capitulum or Head of flowers.—Inflorescence with all its flowers sessile (f, Fig. A), inserted side by side on a *common receptacle* (r, Fig. A) formed by the enlarged apex of the flowering stem. The collection of flowers or florets is surrounded by whorls of bracts called the *involucre of the capitulum* (i, Fig. A). Each floret may be accompanied by a tiny scale-like bract usually called a *scale*.



EXAMPLES: 29, 30, capitula; 31, head of flowers without involucre; 32, vertical section through capitulum showing the convex common receptacle.



Carpel.—The pistil, in the centre of the flower, is composed of one or more carpels. The carpels are much modified leaves.

The simplest case to understand is that in which the carpels are free from one another, i.e. not joined. It is then seen that each carpel is usually made up of: (1) An enlarged part or *ovary* (*o*, Fig. B) at the base; enclosing one or more small white rounded bodies named *ovules* (*ov* Fig. B); (2) a more slender part above the ovary, known as the *style* (*s*, Fig. B); (3) a small viscous mass at the apex of the style, known as the *stigma* (*sg*, Fig. B). The stigma retains the dust-like pollen liberated from the stamens; the pollen must necessarily be deposited on the stigma if the ovules are to ripen into seeds.

In other cases, the carpels are united by their ovaries, or by their ovaries and styles, and the flower then has one compound ovary and several styles, or at least several stigmas.

The carpels are sometimes so completely united as to form a single compound ovary, style, and stigma.

EXAMPLES: 33, pistil of many free carpels collected in a head; 34, vertical section through flower showing a pistil of many free carpels on a long receptacle; 35, vertical section of flower showing a pistil of several free carpels; 36, pistil of several carpels arranged circularly; 37, 38, pistil of two carpels having ovaries united and styles free; 39, pistil of two carpels completely united into a single ovary, style, and stigma; 40, pistil of three carpels united only by their ovaries.



Cauline (leaves).—On an aerial stem.

Chambers.—The cells containing the pollen in the anther-lobes; the cells containing the ovules in an ovary.

Cilia.—Hairs in a row bordering any part of a plant.

EXAMPLES: See *Ciliate*.

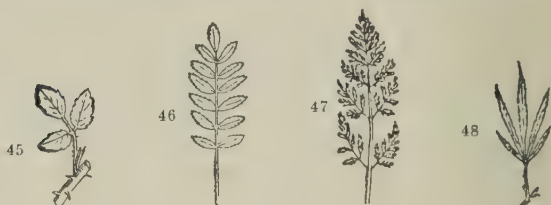
Ciliate.—Bearing cilia.

EXAMPLES: 41, calyx laid open, teeth ciliate; 42, leaf ciliate; 43, scales ciliate along the dorsal rib; 44, sheath ciliate around apex.



Compound (leaf).—Leaf-blade divided to midrib into separate parts called *leaflets*. [P.T.O.]

EXAMPLES: 45, leaf trifoliate, i.e. leaflets three (ternate); 46, leaflets in two rows (pinnate), and one leaflet terminal; 47, leaf twice divided (bi-pinnate); 48, leaf with leaflets arising at one point (digitate).



Connate.—Two similar organs united round the stem.

EXAMPLES: Fig. A, p. 65; Fig. C, p. 83.

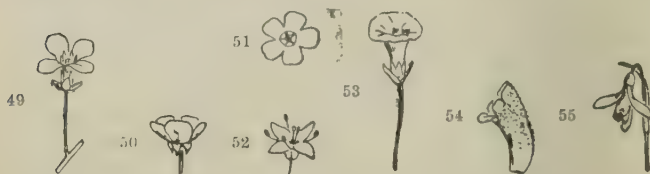
Cordate (leaf).—Heart-shaped.

EXAMPLES: Fig. A, p. 11; Fig. VP, p. 22.

Corm.—Solid underground stem shortened vertically as in the crocus.

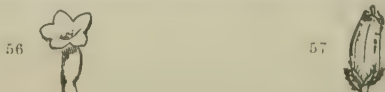
Corolla.—When a flower has two different envelopes, the inner is the *corolla*, and the outer the *calyx*. The corolla is composed of a number of particular leaves called *petals* which are either quite free from one another, or more or less joined together. The corolla may be united to other parts of the flower throughout a variable part of its length. It is usually of a colour and texture other than those of the calyx, or may resemble the calyx except in its relative position.

EXAMPLES: 49, 50, petals separate; 51, 52, petals united at the base; 53, 54, petals united throughout the whole or greater part of their length; 55, petals resembling the sepals but recognisable from their position.



Corolla-tube.—Tube formed by united petals.

EXAMPLES: 56, corolla tubular at base; 57, corolla entirely tubular.



Crenate.—Margin with rounded teeth.

EXAMPLES: 58, margin coarsely crenate; 59, margin finely crenate.



D

Deciduous.—Falling early or in the autumn.

Decumbent (stem).—Prostrate but turning upwards at apex.

Decurrent (leaf).—Limb of leaf prolonged down the stem.

EXAMPLE: Fig. SO, p. 120.

Dehiscent.—Opening to liberate pollen or seeds.

Dentate.—Margin toothed.

EXAMPLES: Figs. L, O, p. 83.

Didynamous.—Stamens 2 long, 2 short.

EXAMPLES: Fig. CL, p. 134; Fig. I, p. 135.

Dimorphic.—Anthers and stigmas at two different levels in flowers of the same species.

Diœcious.—Staminate and pistillate flowers borne on different plants.

E

Entire.—Margin not lobed or toothed.

EXAMPLE: 60, leaf entire.



Envelope (Floral).—A general term for calyx or corolla.

Epicalyx.—Supplementary sepals present below ordinary sepals in some flowers, and forming a kind of outer calyx.

EXAMPLE: 61, epicalyx, calyx, and corolla of flower; 62, epicalyx and calyx, petals removed. The smallest structures form the epicalyx.



Escape.—See *Garden Escape*.

Extrorse.—Anthers opening and shedding pollen away from stigmas.

F

Filament.—Part of stamen bearing the anther.

EXAMPLE: 63, stamen with a long filament bearing the anther.



Flower.—Collection of particular leaves terminating a stalk. The essential organs of the flower are the stamens and pistil. The function of the flower is the formation of fruit and seed (see *Fruit*). The stamens and pistil are usually protected during their development by one or more envelopes (see *Calyx* and *Corolla*).

Flowering season.—Period during which plant is in flower.

Fronds.—The leaves of Ferns.

EXAMPLES: Figs. V, D, p. 226.

Fruit.—When the flower withers, if pollen has been transferred from the anthers to the stigma, the ovary ripens into a *fruit* containing seeds. The ripe fruit may dehisce and so liberate the seeds, or may become detached as a whole with the seed or seeds inside it. When the fruit is dry, remains closed, and contains only one seed, it is easy to confuse it with a seed; but it can generally be recognised by the scar, or remains of the style or styles at its apex.

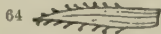
G

Garden escape.—Uncultivated plant growing from seed of a cultivated one.

Glabrous.—Smooth; not hairy.

Glandular (hairs).—Hairs with a rounded mass, often viscid or scented, at their apex or base. An organ is usually termed glandular when it bears glandular hairs, or when its surface is covered with small rounded masses.

EXAMPLE: 64, sepal fringed with glandular hairs; 65, petal with glandular surface.



Glaucous.—Bluish or whitish green due to a waxy bloom on the surface, as on a cabbage leaf, a plum, a grape.

Glume.—See *Gramineæ*, p. 198.

Glumella.—See *Gramineæ*, p. 198.

Grooved.—Marked by longitudinal furrows.

EXAMPLE: F, portion of furrowed stem.



Gynæcium.—The pistil.

H

Hastate (leaf).—Auricles of leaf pointing more or less horizontally.

EXAMPLE: Fig. M, p. 182.

Hermaphrodite (flower).—Stamens and pistil present in same flower, i.e. flower perfect.

Hispid.—Covered with rather stiff hairs.

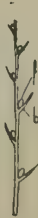
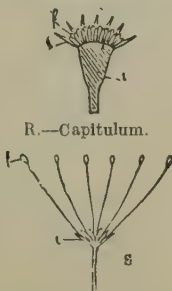
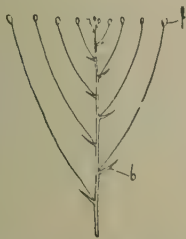
Hybrid.—Plant developed from a seed produced in a pistil of one species which has received the pollen of another species. Hybrids usually exhibit characters intermediate between those of the two species from which they are derived, and their fruits are often malformed.

I

Indehiscent (fruit).—Not opening to liberate seeds.

Inflorescence.—A flowering branch bearing a single flower or a collection of flowers, sometimes separated from one another only by bracts.

The chief simple inflorescences are:—(1) The *raceme*, in which the pedi-



G.—Raceme.

C.—Corymb.

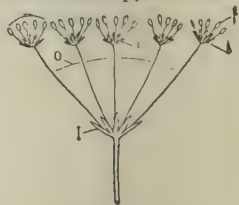
O.—Umbel.

E.—Spike.

(f, flower; b, bract; d, length of pedicel; l, distance between the pedicels; i, involucre; r, common receptacle.)

cels (d, Fig. G) are about equal in length, and also equal to the length of the stalk l separating two successive pedicels; the *corymb* (Fig. C) is a

raceme in which the lower pedicels are longer than the upper and all flowers are brought to one level.—(2) The umbel (Fig. O), an inflorescence in which the pedicels all arise at one level, and are of equal length; they are usually surrounded at their base by an involucre of bracts (*i*, Fig. O).—(3) The *spike* with its flowers sessile (*f*, fig. E) and at different levels.—(4) The capitulum with its flowers sessile and attached side by side (Fig. R).



M.—Compound umbel.

An inflorescence can be compound, i.e. consist of a collection of several simple inflorescences. Flowers may thus be grouped in an umbel of umbels or compound umbel (Fig. M), in a raceme of racemes or compound raceme, in a corymb of capitula, a raceme of spikes, etc.

Introrse.—Anthers opening and shedding pollen towards stigmas.

Involucel.—Collection of bracts at base of an umbellule, or partial umbel, in a compound umbel (*i*, Fig. M, above).

EXAMPLE: See *Involucre*, Figs. 69, 70.

Involucre.—Whorl or whorls of bracts at base of a capitulum or an umbel, or below one or several flowers.

EXAMPLES: 66, 67, capitula each surrounded by involucre; 68, umbel with involucre at base; 69, compound umbel with involucre at its base, and involucel at base of partial umbel or umbellule (all rays but one have been cut short); 70, compound umbel within involucre and involucels; 71, 72, involucre of three leaf-like bracts below a single flower.



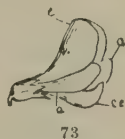
Involute.—Rolled towards upper surface.

Irregular (flower).—Flower in which a right and a left half can be distinguished, i.e. symmetrical in one plane, or, flower not exhibiting any symmetry.

EXAMPLES: Fig. 73, p. 251; Figs. M, SU, p. 126.

K

Keel.—The two more or less united anterior petals, which together resemble the keel of a boat (*cc*, Fig. 73), in the flowers of the N.O. Leguminosæ.



L

Labellum.—Petal resembling a lip and so differing considerably from the other petals of an Orchid.

EXAMPLES: 74, Orchid flower showing labellum *d*; 75, Orchid flower showing labellum *l*.



Lamina.—Leaf-blade.

Lanceolate (leaf).—About three times as long as broad, and tapering towards each end.

EXAMPLE: Fig. LA, p. 142.

Leaf.—One of the three primary organs of a plant, always borne on a stem, and usually with a bud or branch in its axil. The leaf generally differs from the stem and root in having a right and a left side and an upper and a lower surface. (See *Compound leaf*.)

EXAMPLE: 76, leaf having a blade or lamina and a petiole, and bearing a small bud in its axil.



Leaflets.—The separate parts of a compound leaf-blade. (See *Compound Leaf*.)

Ligulate (flowers).—Those Compositæ flowers with a flattened or strap-shaped corolla (Fig. 77). Before they are fully developed, the ligulate florets can easily be confused with tubular florets.



Lobes (Leaf).—More or less separate parts of the leaf-blade.

M

Median (leaves).—Leaves borne on the middle part of the stem.

Membranous.—Thin, having a consistence somewhat resembling parchment.

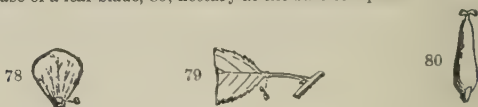
Monœcious.—Staminate and pistillate flowers borne on the same plant.

N

Naturalised (plant).—Plant that continues to reproduce itself after its introduction into a country through the influence of man.

Nectary.—Structure secreting and exuding little drops of sweet liquid, i.e. nectar.

EXAMPLES: 78, nectary covered by a scale *e* at the base of a petal; 79, nectaries *g* at the base of a leaf-blade; 80, nectary at the base of a pistil.

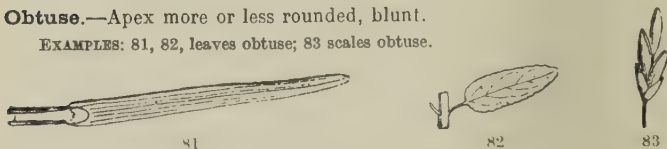


Node.—Part of stem to which base of leaf is attached. If the leaf sheathes the stem, as in grasses, the node is at the base of the sheath.

O

Obtuse.—Apex more or less rounded, blunt.

EXAMPLES: 81, 82, leaves obtuse; 83 scales obtuse.



Opposite (leaves).—Leaves borne in pairs at the same node.

EXAMPLE: 84, leaves opposite.



Ovary.—That part of a pistil or of one carpel of a pistil which encloses the ovule or ovules. (See *Carpel*.)

Ovules.—Small rounded or oval bodies, usually white, attached to the margins of the carpel and enclosed in the ovary. After the flowering period, the ovules ripen into seeds.

P

Papilionaceous.—Corolla resembling a butterfly. (See *Wings*.)

Pappus.—Tuft of hairs or ring of scales borne on a fruit.

EXAMPLES: Figs. P, C, p. 92.

Pectinate.—Resembling a comb.

EXAMPLE: Fig. AR, p. 131.

PediceL.—Stalk terminating in a flower, and commonly called the flower-stalk. For example, the flower *f* (Fig. P) is borne on a pedicel *p* in the axil of the bract *b* on the peduncle *t*.



Pedicellate.—Having a distinct pedicel.

Peduncle.—The main flower-stalk, i.e. that part of the stem which bears the pedicels (*t*, Fig. P, above).

Peltate (leaf).—One in which the stalk is attached to the under surface of the blade.

EXAMPLE: Fig. H, p. 71.

Perennial (indicated by the abbreviation P.).—Plant living more than two seasons. Trees, shrubs, and herbaceous plants with well-developed underground stems are perennials.

Perfect (flower).—Having both stamens and pistil.

Perfoliate (leaf).—Blade of leaf completely surrounds stem.

EXAMPLE: Fig. R, p. 76.

Perianth.—Term usually used when calyx and corolla are similar in colour and texture.

Persistent.—Existence prolonged beyond that of analogous organs in the majority of plants. Thus, persistent leaves are those that do not fall in the autumn.

Petal.—See *Corolla*.

Petiole.—Relatively narrow part below leaf-blade, and commonly called leaf-stalk.

Petiolate.—Having a petiole.

Pinnate (leaf).—Compound leaf with leaflets in rows on either side of midrib. (See *Compound Leaf*.)

Pistil (*Gynæcium*).—That part of a flower formed by the carpels whether free from or united to one another, and occupying the centre of the flower.

EXAMPLES: See *Carpel*.

Pistillate (flower).—Flower having a pistil but no stamens.

Pollen.—Dust-like grains formed in the anther of a stamen and liberated when anther is ripe. The pollen must be transferred to the stigmas of the pistil before the latter can ripen into a fruit and its ovules into seeds.

Prickle.—Sharply pointed structures borne irregularly on the surface of a stem or other organ.

EXAMPLES: 85, 86, prickles on stems; 87, prickles on a fruit.



R

Raceme.—A *simple raceme* is an inflorescence in which the flowers are distinctly stalked and borne one above the other on a main flower-stalk or peduncle. A *compound raceme* is an inflorescence of groups of flowers arranged in a raceme.

EXAMPLES: 88, simple raceme; 89, compound raceme.



Radical (leaves).—Borne on stem at or slightly below the ground level.

EXAMPLES: Fig. B, p. 235; Figs. AM, T, p. 92.

Receptacle.—The upper part of the pedicel or peduncle on which the various parts of the flower are inserted.

EXAMPLES: 90, 91, vertical sections of flowers showing the parts of flower fixed on a flat receptacle (90) and on an elongated receptacle (91); 92, vertical section of capitulum to show the common receptacle on which the numerous florets are inserted; 93, capitulum with all its florets removed and the bracts of the involucre cut to show the surface of the common receptacle.



Revolute.—Rolled towards under surface.

Root.—One of the three primary organs of a plant. It is distinguished from a stem in bearing neither leaves, nor scales, nor the scars of fallen leaves. It is distinguished from a leaf in having neither a right nor a left side, nor an upper or a lower surface.

Rootlet.—Branch of a root.

Rosette (Leaves in a).—A number of leaves attached very close together on the stem and spreading radially outwards.

EXAMPLE: 94, rosette of leaves.



S

Sagittate (leaf).—Auricles of leaf pointing downwards.

EXAMPLE: Fig. A, p. 148.

Scales.—Leaves considerably reduced in size and not performing the usual functions of a leaf; chaffy structures occurring on different parts of a plant; membranous bracts in many inflorescences.

EXAMPLES: 95, plant with all its leaves reduced to scales; 96, chaffy scales on lower part of a fern frond; 97, scales between flowers of a capitulum; 98, scales on a spike; 99, a detached scale.



Seed.—As the ovary ripens to form the fruit, the ovules in the ovary ripen to form the seeds; thus seeds are enclosed in a fruit except in the *Gymnosperms* (see p. 240). The seed consists of one or more envelopes (*seed coats*) enclosing a *little plant or embryo* which is sometimes imbedded in food (*endosperm*) stored for its future use. When the seed germinates, the embryo grows and produces a plant similar to the parent plants.

Sepal.—See *Calyx*.

Sessile.—Without a stalk.

Sheath.—The expanded base of a leaf more or less surrounding or *sheathing* the stem throughout a variable length.

EXAMPLES: Fig. SL, p. 76; Fig. L, p. 190.

Simple (leaf).—One with its blade not separated into leaflets.

EXAMPLE: Fig. 76, p. 251.

Sinuate (leaf).—Margin bluntly and irregularly lobed.

EXAMPLES: Fig. G, p. 8; Fig. Q, p. 158.

Sorus.—Cluster of sporangia.

Spike.—A *simple spike* is an inflorescence having all its flowers sessile and one above the other. A *compound spike* has groups of flowers arranged in a spike.

EXAMPLES: 100, simple spike; 101, spike of spikes or compound spike.



Spikelet.—See *Gramineæ*, p. 198.

Spine.—Leaf, stipule, or part of leaf modified into an elongated and pointed structure.

EXAMPLE: Fig. B, p. XXI.

Sporangia.—Small sacs enclosing the spores in certain cryptogams. (See *Polypodiaceæ*, p. 224.)

Spreading.—Diverging from the point of attachment.

Spur.—The tubular or horn-shaped base of some sepals and petals.

EXAMPLES: 102, 103, 104, spurred flowers (e, Fig. 104).



Stamens (*Andræcium*).—Organs forming the *pollen*, the coloured dust which must be deposited on the stigmas of the pistil if the ovules are to become seeds. A stamen is generally composed of a stalk or *filament* (f, Fig. E) terminated by an enlarged part or *anther* (a, Fig. E). The anther contains the pollen and, when ripe, opens to liberate it. The stamens are often free or detached quite to their base, and inserted on the receptacle as are the sepals, petals and carpels. Often also they are united to other parts of the flower, either calyx or corolla. Flowers which have stamens but no pistil are called *staminate flowers*.

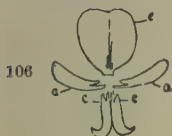


105

EXAMPLE: 105; flower with four stamens around the style.

Standard.—The upper or posterior petal in a papilionaceous flower (N.O. *Leguminosæ*). The standard (e, Fig. 106) overlaps the petals (*wings*) to the right and left (a, a, Fig. 106) which in turn overlap the two more or less united lower petals or *keel* (c, c, Fig. 106).

EXAMPLES: 106, detached petals of a papilionaceous flower; 107, papilionaceous flower showing the standard to the left; 108, standard isolated.



Stem.—One of the three primary organs of a plant. It is distinguished from a root by its leaves or leaf-scars, and from a leaf by the absence of right and left sides, and upper and lower surfaces. The stem may be *aerial*, *underground*, or *aquatic*.

Stigma.—The more or less viscid apex of a carpel, or of a pistil when the carpels are united, often borne on an elongated structure or *style*. The stigma retains on its surface the pollen transferred from the stamens. (See *Pistil*.)

EXAMPLES: 109, pistil having two styles each terminated by a swollen stigma; 110, two stigmas united at base (stigma bifid); 111, pistil with radiating stigmas on a sort of disc.



Stipules.—Parts of a leaf on the right and left of the base of the petiole just where the latter is attached to the stem. Many leaves have no stipules.

EXAMPLES: 112, compound leaf with pair of stipules at its base; 113, one of these two stipules; 114, 115, leaf with pair of stipules united to the petiole; 116, base of a leaf with toothed stipules; 117, base of a leaf with united sheathing stipules; 118, leaf with well-developed leaf-like stipules and a blade modified as a tendril.



Striate.—Slightly grooved longitudinally.

EXAMPLE: 119, striated fruit.



Style.—The more or less elongated structure bearing the stigma of a carpel. In some flowers the style is very short or not developed.

EXAMPLES: 120, vertical section of flower showing the style in the middle; 121, flower showing style surrounded by four stamens; 122, vertical section of flower showing ovary surmounted by two styles; 123, fruit with two persistent styles; 124, flower showing ovary with five short styles.



120



121



122



123



124

T

Tendril.—Elongated and sensitive parts of a stem or a leaf, responding to the stimulus of contact by twining round or attaching themselves to support, and so enabling the plant to climb.

EXAMPLE: 125, leaf with upper leaflets modified as tendrils.



125

Thorn.—Branch modified to form a sharply pointed structure.

EXAMPLE: 126, branch modified as a thorn.



126

Trimorphic.—Anthers and stigmas at three different levels in flowers of the same species.

Tuber.—Swollen part of a root or underground stem.

EXAMPLES: 127, underground stem with tubers; 128, tuberous roots.



127

128



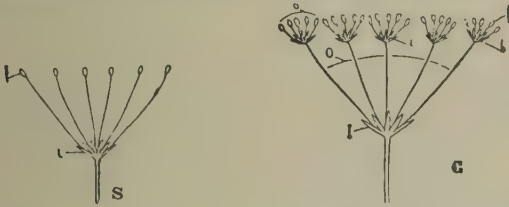
Tubular (flowers).—Florets with a tubular corolla as in the Compositæ.

EXAMPLE: Flg. 129.



U

Umbel.—A *simple umbel* (Fig. S) is an inflorescence with all its flowers borne on pedicels of equal length and attached at the same level. A *compound umbel* (Fig. C) is an umbel of umbels, i.e. an umbel made up of



small umbels known as partial umbels or umbellules (*o*, Fig. C) which are themselves grouped in an umbel (*O*, Fig. C). The bracts form a main whorl or *involucre* at the base of the umbel (*I*, Fig. C), and a subsidiary whorl or *involucel* at the base of each partial umbel (*i*, Fig. C).

EXAMPLES: 130, simple umbel; 131, compound umbel; 132, compound umbel having all rays but one cut short.

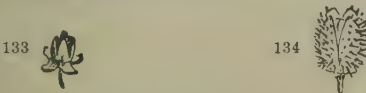


Umbellule.—See *Umbel*.

V

Valve.—One of the parts into which the wall of a fruit splits when ripe.

EXAMPLES: 133, fruit splitting into three valves and surrounded by a persistent calyx; 134, fruit splitting into four valves.



Veins (of the leaf).—The leaf-blade is traversed by small threads (*veins*) diminishing in thickness from the base of the leaf towards the margins and often projecting on the under surface; as a rule, they can easily be seen by transparence. The median vein is the *midrib*.

Venation.—Arrangement of veins in a leaf,

W

Whorled (leaves).—Leaves, three or more in number, borne at the same node or level on the stem; often called *verticillate*.

EXAMPLES: 135, four leaves in a whorl; 136, six leaves in a whorl.



Wild (plant).—A plant growing and reproducing itself naturally, i.e. not cultivated or planted.

Wing.—Thin, flat, projecting part of a plant structure.

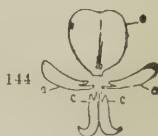
EXAMPLES: 137, 138, 139, winged stems; 140, cross-section of a four-winged stem; 141, cross-section of a four-winged fruit; 142, cross-section of an eight-winged fruit.



Winged.—See *Wing*.

Wings.—The two lateral petals in a papilionaceous flower.

EXAMPLES: 143, papilionaceous flower showing the two petals called wings *a, a*; 144, detached petals of the same flower showing the wings *a, a*.



ABBREVIATIONS OF NAMES OF AUTHORS

A. Br.	Alexandre Braun.	Crép.	Crépin.
Adans.	Adanson.	Curt.	Curtis.
Ait.	Aiton.	Dal., Dalech.	Dalechamp.
All.	Allioni.	DC.	De Candolle
Alph. DC.	Alphonse de Candolle.	Dcne.	Dcaisne.
Anders.	Anderson.	Del.	Delile.
Andrz.	Andranz.	Delarb.	Delarbre.
Ard.	Arduini.	Desf.	Desfontaines.
Arn.	Arnott.	Desp.	Desportes.
Asch.	Ascherson.	Desr.	Desrousseaux.
Auct.	Of various authors.	Desv.	Desvaux.
Bab.	Babington.	Dietr.	Dietrich.
Balb.	Balbis.	Dill.	Dillenius (Dillen).
Balf.	Balfour.	Don	David Don.
Barrl.	Barrellier.	Dou.	Douglas.
Bart.	Bartling.	Dub.	Duby.
Bast.	Bastard.	Duch.	Duchesne.
Bauh.	Bauhin.	Dumort.	Dumortier.
B. & de L.	Bonnier and de Layens.	Dun.	Dunal.
Beauv.	Beauvois.	Dur.	Durieu.
Benth.	Bentham.	Edm. Bon.	Edmond Bonnet.
Bernh.	Bernhardi.	Ehrh.	Ehrhart.
Berg.	Bergius.	Ell.	Elliot.
Bert.	Bertoloni.	Endl.	Endlicher.
Bess.	Besser.	Engelm.	Engelmann.
Big.	Bigelow.	Fing.	Fingerhuth.
Bœn., Bœnning.	Bœnninghausen.	Fisch.	Fischer.
Boiss.	Boissier.	Fl. d. Wett.	(Flora des Wetterau).
Bor.	Boreau.	Forst.	Forster.
Borkh.	Borkhausen.	Frank.	Frankenius.
Bréb.	de Brébisson.	Fr.	Fries.
Britt. & Rend.	Britten and Rendle.	Fresen.	Fresenius.
Bromf.	Bromfield.	Fuchs.	Fuchsius.
Brong.	Brongniart.	Gært.	J. Gærtner.
Brot.	Brotero.	Gant.	Ganterer.
Burm.	Burmann.	Gaud.	Gaudin.
Camb.	Cambessèdes.	G. G.	Grenier and Godron.
C. A. Mey.	C. A. Meyer.	Gmel.	Gmelin.
Cass.	Cassini.	Godr.	Godron.
Cav.	Cavanilles.	Good.	Goodenough.
C. B., C. Bauh.	C. Bauhin.	Gren.	Grenier.
Cham.	de Chamisso.	Griseb.	Grisebach.
Chaub.	Chaubard.	Guers.	Guersant.
Clairv.	Clairville.	Gunn.	Gunner.
Coss.	Cosson.	Guss.	Gussone.
Coss. & Germ.	Cosson and Germain.	Hall.	Haller.
Coult.	Coulter.	Hartm.	Hartmann.
Cr.	Crantz.	Haw.	Haworth.

Herm.	Hermann.	Pers.	Persoon.
Hoffm.	Hoffmann.	Planch.	Planchon.
Hoffms.	Hoffmannsegg.	Poir.	Poiret.
Hook.	W. J. Hooker.	Poit.	Poiteau.
Hook. fl.	J. D. Hooker.	Poit. & Turp.	Poiteau and Turpin.
Horn.	Hornemann.	Poll.	Pollich.
Huds.	Hudson.	Pourr.	Pourret.
Jacq.	Jacquin.	Rafin.	Rafinesque.
Jord.	Jordan.	R. & P.	Ruiz and Pavon.
Ken.	Kenyon.	R. & S.	Rœmer and Schultes.
Kit.	Kitaibel.	R. Br.	Robert Brown.
Kœl.	Kœler.	Rehb.	Reichenbach.
Kœn.	Kœnig.	Reich.	Reichard.
Krnck.	Kœrnicke.	Retz.	Retzius.
Krock.	Krocker.	Reut.	Reuter.
Kütz.	Kützing.	Reyn.	Reynier.
L.	Linnæus.	Rich.	L. C. Richard.
L. fl.	The younger Linnæus.	Riv.	Rivinus.
Lag.	Lagasca.	Rœm.	J. J. Rœmer.
Lah.	Laharpe.	Salisb.	Salisbury.
Lam.	de Lamarck.	Salzm.	Salzmann.
Lap., Lapeyr.	de La Peyrouse.	St.-Am.	Saint-Amans.
Lat.	Latourette.	S. & M.	Sebastiani and Mauri.
Lec.	Lecoq.	Schk.	Schkuhr.
Ledeb.	Ledebour.	Schlecht.	Schlechtendal.
Lehm.	Lehmann.	Schleich.	Schleicher.
Lej.	Lejeune.	Schleid.	Schleiden.
Leonh.	Leonhardi.	Schltz.	Schultz.
Less.	Lessing.	Schm.	Schmidt.
Lestib.	Lestiboudois.	Schnizl.	Schnizlein.
Leyss.	Leysser.	Schousb.	Schousboc.
L'Hérit.	L'Héritier.	Schrad.	Schrader.
Light., Lightft.	Lightfoot.	Schreb.	Schreber.
Lindl.	Lindley.	Schrk.	Schrank.
Lob.	Lobel.	Schult.	Schultes.
Loefl.	Loefling.	Schw., Schweig.	Schweigger.
Lois.	Loiseleur.	Scop.	Scopoli.
M. & K.	Mertens and Koch.	Sebast.	Sebastiani.
Mart.	Martins.	Ser.	Seringe.
M. B.	Marschall von Biebers- tein.	Sibth.	Sibthorp.
Med.	Medicus.	Sm.	J. E. Smith.
Mér.	Mérat.	Soland.	Solander.
Mert.	Mertens.	Sond.	Sonder.
Mey.	Meyer.	Soy.-Will.	Soyer-Willemet.
Mich.	Micheli.	Spenn.	Spenner.
Michal.	Michalet.	Spr.	Spengel.
Michx.	Michaux.	Stend.	Stendel.
Mik.	Mikan.	Ster.	Stern.
Mill.	Philip Miller.	Sterub.	Sternberg.
Mirb.	de Mirbel.	Strempe.	Strempel.
Moq.	Moquin-Tandon.	Sutt.	Sutton.
Moris.	Morison.	Sw.	Swartz.
Murr.	Murray.	Ten.	Tenore.
Mut.	Mutel.	Thuill.	Thuillier.
Neck.	Necker.	Timb.	Timbal-Lagrave.
Nees.	Nees von Esenbeck.	Ton.	Tourey.
Nestl.	Nestler.	Trin.	Trinius.
Nutt.	Nuttall.	Turez.	Turczaninow.
Nym.	Nyman.	Turp.	Turpin.
Oth.	Othhs.	Vaill.	Vaillant.
Pall.	Pallas.	Vent.	Ventenat.
Parlat.	Parlatore.	Vig.	Viguier.
P. B.	Palisot de Beauvois.	Vill.	Villars.
		Viv.	Viviani.

Wahlb., Whlnb.	Wahlenberg.	Weig.	Weigel.
Waldst.	Waldstein.	Wend.	Wenderoth.
Wallm.	Wallmann.	Wendl.	Wendland.
Wallr.	Wallroth.	Wib.	Wibel.
Walp.	Walpers.	Wigg.	Wiggers.
W. & K.	Waldstein and Kitaibel.	Willd.	Willdenow.
W. & N.	Weiche and Nees.	Wimm.	Wimmer.
Wats.	Watson.	With.	Withering.
Wedd.	Weddell.		

INDEX

OF THE

LATIN NAMES OF NATURAL ORDERS, GENERA, SPECIES AND VARIETIES

including etymology of genera, synonyms, properties and localities.

NOTE

Natural Orders are in **HEAVY TYPE CAPITALS**.

Genera are in **heavy type**.

Species and varieties are in ordinary type.

Synonyms are in *italics* connected by the sign = (equals); the last name is always the one under which the plant is admitted in this flora.

The sign ✕ indicates that the plant can be utilised. Its properties and the uses to which it can be put are printed in small type.

An asterisk indicates that the plant is much sought by bees for its nectar or pollen.

Localities are in *small italics*.

Eng. — England; Wa. — Wales; Sc. — Scotland; Ir. — Ireland.

E. — East; W. — West; S. — South; N. — North.

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of the

FRENCH AND ENGLISH

NAMES OF PLANTS

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DISTRIBUTION OF PLANTS

IN THE BRITISH ISLES

The distribution of plants is determined by the altitude and latitude of the country, by the kind of soil, the amount of rainfall and direct sunlight, and by man.

The influence of man has caused extended areas of soil to be put under cultivation, trees to be cut down, and marshes to be drained. This has been carried out to such an extent that in many districts the indigenous flora tends to disappear, and much interest is consequently attached to those areas where the vegetation is still more or less natural. Though many plants are reduced in number or have become extinct through man's influence, others have been introduced and have become naturalised in the country. Amongst them may be mentioned *Erigeron canadensis*, *Impatiens biflora*, and *Elodea canadensis*, all natives of North America. The latter plant has spread with amazing rapidity in the waterways of the British Isles. Oriental plants such as *Lycium barbarum* and *Veronica Buxbaumii* have established themselves in the hedges and fields, as also have certain southern plants as for example *Xanthium spinosum*, *Berteroa incana*, *Barkhausia setosa*, *Centaurea solstitialis*, *Vicia hybrida*.

The effect of soil on the distribution of plants is well illustrated by the floras of the sea-coast, marshes, calcareous ground, and rocky places. Altitude governs the distribution of some plants as is shown by the floras of hilly districts and mountains as compared with those of the plains. A woodland flora is distinctly different from that of the surrounding open ground; light therefore plays a part in determining what plants shall grow in a given area.

Sea-coast flora.—This flora includes all those plants which grow so near to the sea as to be on the coast-line. The soil and air contain a certain proportion of sea salts; the soil either retains little water or is more or less covered by the sea at high tides. The plants are those which can adapt themselves to the presence of sea salts, and to exposed conditions under which they can obtain little fresh water; in the sand dunes, the plants must also be capable of quick growth that they may fix themselves firmly, and be able to reach the surface afresh should they become buried by drifts. The coast may be of sand, shingle, rock, or have more or less extensive salt marshes; each kind of shore has a distinct flora showing a marked variation of plant life with the substratum.

Shingle.

Beta maritima L.
Glaucium flavum Cr.
Pneumaria maritima Hill
Polygonum maritimum L.
Raphanus maritimus Sm.
Silene maritima With.
Suaeda fruticosa Forsk.

Sand.

Agropyrum acutum Rœm.
Agropyrum junceum P.B.
Agropyrum pungens R. & S.
Agropyrum pycnanthum G. G.
Artemisia maritima L.
Atriplex laciniata L.
Cakile maritima Scop.
Carex arenaria L.
Cerastium tetrandrum Curt.
Convolvulus Soldanella L.
Crambe maritima L.
Elymus arenarius L.
Eryngium maritimum L.
Erythraea linariifolia Pers.
Euphorbia Paralias L.
Glyceria distans Wahlb.
Glyceria procumbens Sm.
Hippophae rhamnoides L.
Honckenia peploides Ehrh.
Koeleria cristata Pers., var. *albescens* DC.
Lathyrus maritimus Big.
Matricaria inodora L., var. *maritima* L.
Plantago maritima L.
Psamma arenaria R. & S.
Sagina maritima Don
Salsola Kali L.
Spergularia salina Presl.

Cliffs.

Armeria maritima Willd.
Aster Linosyris Bernh.
Brassica oleracea L.
Crithmum maritimum L.
Daucus gummifer Lam.
Foeniculum vulgare Mill.
Matthiola incana R.Br.
Matthiola sinuata R.Br.
Statice occidentalis Lloyd

Salt Marsh.

Atriplex littoralis.
Aster Tripolium L.
Carex extensa Good.
Cochlearia officinalis L.
Glaux maritima L.
Glyceria maritima M. & K.
Inula crithmoides L.
Juncus maritimus Lam.
Lepidium latifolium L.
Obione pedunculata Moq.
Obione portulacoides Moq.
Oenanthe Lachenalii Gmel.
Ruppia maritima L.
Salicornia herbacea L.
Salicornia radicans Sm.
Scirpus maritimus L.
Spartina alterniflora Loels.
Spartina stricta Roth
Spergularia media Presl.
Statice Limonium L.
Suaeda maritima Dumort.
Trifolium maritimum Huds.
Triglochin maritimum L.
Zostera marina L.
Zostera nana Roth

Marsh and water floras.—Near many streams and rivers are stretches of flat land under water at certain seasons, or with a high level of ground water; some parts of lakes, streams and rivers have quiet water; in ponds and ditches the water is still. The fens, broads and slowly running rivers of the eastern counties of England afford an excellent illustration of such conditions; many others on a smaller scale are present throughout the British Isles. The plants growing in these habitats have an abundant supply of fresh water, but would suffer from insufficient aeration if they were not provided with large air channels throughout their stems, leaves, and roots. These air channels serve the additional purpose of rendering buoyant those plants which grow in the water. The marsh flora often passes gradually into the water flora, and as the depth of water increases, the rooted swamp plants, such as reed-grasses and bulrushes, give place to plants with longer stems or petioles as for example the pondweeds and water-lilies. The free-floating plants are found in still or quiet water of varying depth. The following are some of the more common plants comprising the marsh and water floras :

Acorus Calamus L.
Alisma Plantago L.
Alnus glutinosa Gærtn.
Barbarea vulgaris R.Br.
Butomus umbellatus L.
Callitriche aquatica Huds.
Caltha palustris L.
Carex panicea L.
Carex paniculata L.
Ceratophyllum L. (both species).
Cirsium palustre Scop.
Comarum palustre L.
Elatine hexandra DC.
Epilobium hirsutum L.
Equisetum limosum L.
Eriophorum latifolium Hoppe
Gallium palustre L.
Glyceria fluitans R.Br.
Hippuris vulgaris L.
Hottonia palustris L.
Hydrocharis Morsus-ranæ L.
Hydrocotyle vulgaris L.
Hypericum elodes L.
Iris Pseudacorus L.
Juncus conglomeratus L.
Lemna minor L.
Lychnis Flos-cuculi L.

Lycopus europæus L.
Lysimachia vulgaris L.
Lythrum Salicaria L.
Mentha L. (several species).
Myosotis palustris With.
Myriophyllum spicatum L.
Nasturtium officinale R.Br.
Nuphar luteum Sm.
Nymphæa alba L.
Oenanthe crocata L.
Oenanthe fistulosa L.
Orchis latifolia L.
Phalaris arundinacea L.
Phragmites communis Trin.
Polygonum Hydropiper L.
Potamogeton L. (several species).
Ranunculus aquatilis L.
Sagittaria sagittifolia L.
Salix L. (several species).
Scirpus palustris L.
Sparganium ramosum Huds.
Stratiotes aloides L.
Triglochin palustre L.
Typha angustifolia L.
Typha latifolia L.
Valeriana officinalis L.
Veronica Beccabunga L.

Woodland flora.—The dominant plants are one or more of the forest trees; the shade cast by the trees and undergrowth of shrubs influences the ground flora. The light passing through the foliage is at its maximum in the spring, and the floor of the wood is carpeted with the early flowering plants such as primroses and blue-bells; later the plants to be found there are those which thrive best in the shade, as for example, wood avens and the male fern. There is a minimum intensity of light required for plant growth; this is well shown in the beech wood which is usually devoid of shrubs and herbaceous plants owing to the deep shade cast by the dense foliage of the beech trees. The following are some of the plants forming the ground flora of woodland :

Adoxa Moschatellina L.
Allium ursinum L.
Anemone nemorosa L.
Arum maculatum L.
Asperula odorata L.
Aspidium Filix-mas Sw.
Aspidium spinulosum Sw.
Athyrium Filix-fœmina Roth
Betonica officinalis L.
Blechnum Spicant Roth
Brachypodium sylvaticum R. & S.
Carex sylvatica Huds.
Chrysosplenium oppositifolium L.
Circæa lutetiana L.
Convallaria majalis L.
Digitalis purpurea L.
Endymion nutans Dumort.
Fragaria vesca L.
Galium Aparine L.
Geranium sylvaticum L.
Geum urbanum L.

Hypericum hirsutum L.
Listera ovata R.Br.
Luzula maxima DC.
Luzula vernalis DC.
Lysimachia nemorum L.
Melampyrum pratense L.
Melica uniflora Retz.
Mercurialis perennis L.
Milium effusum L.
Monotropa Hypopitys L.
Neottia Nidus-avis Rich.
Oxalis Acetosella L.
Poa nemoralis L.
Primula vulgaris Huds.
Ranunculus auricomus L.
Sanicula europæa L.
Scirpus sylvaticus L.
Stachys sylvatica L.
Stellaria Holostea L.
Veronica officinalis L.
Viola sylvestris Lam.

Heath, moor, and bog floras.—Heaths and moors are swept by winds and provide a poor water supply for plants. These conditions are more pronounced in the moors than in the heaths as the former are more exposed, often at a higher altitude, and contain a greater proportion of peat. The wet peaty parts of moors form typical bogs; the water present in the soil is too acid to be taken in readily by the roots of plants. Excellent examples of the floras of heath, moor, and bog are afforded by the heaths of the north of Ireland and many other parts of the British Isles, by the moors of Scotland, Ireland, Wales and the north of England, by the Bog of Allan in Ireland, Chatmoss in Lancashire and Solway Moss in Scotland. The bog-moss or *Sphagnum* often covers large areas of the bogs, and is found also in the wetter parts of the moors and heaths. Some of the more common plants of each of the three floras are given below.

Heaths.

Agrostis canina L.
Aira flexuosa L.
Calluna vulgaris Salisb.
Carex pilulifera L.
Cytisus scoparius Link
Erica cinerea L.
Erica tetralix L.
Euphrasia officinalis L.
Galium saxatile L.
Genista anglica L.
Luzula campestris DC.
Molinia cærulea Mönch
Nardus stricta L.
Polygala serpyllacea Weihe
Potentilla Tormentilla Sibth.
Pteris aquilina L.
Sieglingia decumbens Bernh.
Thymus Serpyllum L.
Trifolium arvense L.
Ulex europæus L.

Bogs.

Anagallis tenella L.
Andromeda polifolia L.
Carex canescens L.
Drosera rotundifolia L.
Eriophorum angustifolium Roth
Eriophorum vaginatum L.

Hydrocotyle vulgaris L.
Juncus biglumis L.
Menyanthes trifoliata L.
Myrica Gale L.
Narthecium ossifragum Huds.
Oxycoccois palustris Pers.
Parnassia palustris L.
Pinguicula vulgaris L.
Rhynchospora alba Vahl.
Rubus Chamæmorus L.
Schœnus nigricans L.
Sedum villosum L.
Tofieldia palustris Huds.
Utricularia minor L.

Moors.

Betula nana L.
Calluna vulgaris Salisb.
Carex pilulifera L.
Cornus suecica L.
Empetrum nigrum L.
Erica cinerea L.
Erica tetralix L.
Kobresia caricina Willd.
Listera cordata R. Br.
Molinia cærulea Mönch
Nardus stricta L.
Potentilla Tormentilla Sibth.
Scirpus cæspitosus L.
Vaccinium Myrtillus L.

Hilly districts and mountains.—As the altitude increases so does the degree of exposure to weather conditions, the mean temperature decreases, and the flora becomes less and less extensive. The type of flora also changes; just as certain plants grow only on the plains, others grow only in hilly places, others on the mountains, while a few are to be found only on the highest parts of the highest mountains in Scotland, Ireland, Wales, and the north of England. Local floras are influenced by the type of substratum, moor, bog, rock, or pasture, and by the vicinity of lakes and streams.

Alchemilla alpina L.
Allosurus crispus Bernh.
Anthyllis Vulneraria L.
Arabis petræa Lam.
Arctostaphylos Uva-ursi Spr.
Aspidium Lonchitis Sw.
Campanula rotundifolia L.
Cerastium Cerastoides Britton
Ceterach officinarum Willd.
Dryas octopetala L.
Epilobium alpinum Huds.
Galium boreale L.
Gnaphalium supinum L.
Hieracium alpinum L.
Luzula spicata DC.
Lycopodium clavatum L.
Lycopodium Selago L.

Meconopsis cambrica Vig.
Meum Athamanticum Jacq.
Myrrhis odorata Scop.
Oxyria digyna Hill
Polygonum viviparum L.
Potentilla Sibbaldi Hall
Sagina Saginoides Dalla Torre
Salix herbacea L.
Saxifraga L. (several species).
Sedum roseum Scop.
Selaginella spinulosa A. Br.
Sesleria cærulea Ard.
Silene acaulis L.
Trollius europæus L.
Vaccinium Vitis-idaea L.
Vicia Orobus DC.
Vicia sylvatica L.

Calcareous substratum.—Calcareous soil, excluding some plants and favouring others, has a marked influence on the flora. The beech and ash are the dominant trees; many of the herbaceous plants are equally characteristic. Typical chalk floras on a large scale exist in the Peak district of Derbyshire, the wolds of Yorkshire, the downs and surrounding country in the south-east of England, in north-east Ireland, and across Scotland from the Mull of Cantyre to the Firth of Forth. Smaller areas occur in many parts of the British Isles. A few of the herbaceous chalk-loving plants are given below.

Asperula cynanchica L.
Astragalus glycyphyllos L.
Campanula glomerata L.
Carduus nutans L.
Carum Bulbocastanum Koch
Centranthus ruber DC.
Cirsium eriophorum Scop.
Gentiana Amarella L.
Hippocrepis comosa L.
Inula Conyza DC.

Orchidaceæ (many species).
Origanum vulgare L.
Phyteuma orbiculare L.
Plantago media L.
Polygala calcarea F. Sch.
Poterium Sanguisorba L.
Reseda lutea L.
Scabiosa columbaria L.
Senecio campestris DC.
Thesium humifusum DC.

Note.—The map of the British Isles at the end of the book indicates quite roughly some of the larger and more important areas having characteristic floras. The scale is necessarily far too small to permit of the inclusion of the local floras occurring in the larger areas as, for example, in the English Lake district where the main flora is that of heath, moorland and mountain, while the local floras are those of water, marsh, bog, and woodland glens. Another example is that of the Peak district of Derbyshire where there is a dominant moorland flora at the higher altitudes and a chalk flora in the valleys; as the former covers the greater surface, it is the one represented. Woodlands are always small and local in the British Isles and are not indicated in the map.

ABRIDGED KEY TO THE PRINCIPAL NATURAL ORDERS

I.—Leaves with netted venation.

- Ranunculaceæ.**—*Stamens numerous, free, fixed on receptacle, anthers turned towards exterior of flower.* (See p. 2.)
- Cruciferæ.**—*Stamens 6, 4 long, 2 short.* (See p. 10.)
- Caryophyllaceæ.**—*Ovary without partitions; styles several and free to their base; leaves opposite; nodes swollen.* (See p. 26.)
- Leguminosæ.**—*Corolla papilionaceous* (Fig. 143, p. 260). (See p. 42.)
- Rosaceæ.**—*Stamens numerous, free, fixed on the calyx.* (See p. 54.)
- Umbelliferæ.**—*Flowers in simple or compound umbels; stamens 5; styles 2, free.* (See p. 70.)
- Rubiaceæ.**—*Leaves apparently in whorls; styles 2; petals united at base.* (See p. 84.)
- Compositæ.**—*Flowers in heads or capitula; anthers joined, forming a tube around the style.* (See p. 88.)
- Primulaceæ.**—*Ovary without partitions; stamens opposite the petals; petals joined.* (See p. 113.)
- Solanaceæ.**—*Stamens 5; ovary 2-chambered; petals joined.* (See p. 124.)
- Boraginaceæ.**—*Stamens 5; ovary externally 4-cleft; petals joined.* (See p. 120.)
- Scrophulariaceæ.**—*Stamens usually 4, 2 short, 2 long; ovary 2-chambered; flower irregular; petals united.* (See p. 126.)
- Labiataæ.**—*Stamens 4, 2 short, 2 long; ovary externally 4-cleft; flower irregular; petals united.* (See p. 134.)
- Polygonaceæ.**—*Perianth coloured or green; stipules sheathing.* (See p. 148.)
- Euphorbiaceæ.**—*The genus Euphorbia, comprising in the British Flora most of the species of this N.O., is recognised by its greenish flowers and milky sap or latex.* (See p. 154.)
- Amentaceæ** (Cupuliferæ, Salicaceæ, Betulaceæ).—*Trees or shrubs; staminate flowers in catkins.* (See pp. 158-62.)

II. — Leaves with parallel venation.

- Liliaceæ.**—*Ovary superior; flower regular; stamens 6.* (See p. 164.)
- Amoryllidaceæ.**—*Ovary inferior; flower regular; stamens 6.* (See p. 171.)
- Iridaceæ.**—*Ovary inferior; flower regular; stamens 3.* (See p. 170.)
- Orchidaceæ.**—*Flower irregular; stamen usually one, united to style.* (See p. 172.)
- Cyperaceæ.**—*Flowers membranous, brownish or greenish; leaf-sheaths not split, stems 3-sided.* (See p. 186.)

Gramineæ.—*Flowers membranous, brownish or greenish; leaf-sheaths split; stems rounded.* (See p. 198.)

III. — Flowerless Plants.

Filices (The Ferns).—*Leaves considerably developed as compared with stems.* (See pp. 224-30.)

USE OF ABRIDGED KEY.

The natural orders are very unequally represented in the British flora. Some comprise only a single species, others a great number. The latter are easily recognised as having certain main characteristics; more than three quarters of the British plants can be placed in one or other of the natural orders given in the abridged key.








A little practice in the examination of plants and a knowledge of the principal characters of the natural orders given above should enable the observer to recognise at sight a plant belonging to one of these orders. Reference should then be made to the key of the natural order on the page indicated in the abridged key, and the name of the plant found.

The alternative procedure, which must be adopted for those plants which cannot be put directly in their natural orders, is to begin the analysis with the aid of the general key on pp. XIX-XXXIV.

12 10 8 6 4 2 0 2 4

60 — 60 — 58 — 56 —

KEY TO REGIONS

	<i>Sea Coast.</i>
	<i>Fields, Meadows, Rising Ground.</i>
	<i>Chalk.</i>
	<i>Marsh, Bog.</i>
	<i>Hilly Districts.</i>
	<i>Mountainous Districts.</i>
	<i>Heath, Moorland.</i>





BOTANICAL REGIONS
OF THE
BRITISH ISLES.



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